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May 10, 2005

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From: P. Sheppard
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sheppard@uspto.gov

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=> fil hcaplus
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FILE COVERS 1907 - 10 May 2005 VOL 142 ISS 20
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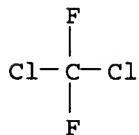
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L1 12 SEA FILE=REGISTRY ABB=ON PLU=ON CCL2F2/MF
L2 11 SEA FILE=REGISTRY ABB=ON PLU=ON CH2F2/MF
L3 1 SEA FILE=REGISTRY ABB=ON PLU=ON DICHLORODIFLUOROMETHANE/CN
L4 1 SEA FILE=REGISTRY ABB=ON PLU=ON DIFLUOROMETHANE/CN
L5 2927 SEA FILE=REGISTRY ABB=ON PLU=ON PALLIDIUM
L6 219466 SEA FILE=REGISTRY ABB=ON PLU=ON ALUMINUM
L7 667 SEA FILE=REGISTRY ABB=ON PLU=ON CATALYST
L8 SEL PLU=ON L1 1- CHEM : 58 TERMS
L9 SEL PLU=ON L3 1- CHEM : 37 TERMS
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L12 11323 SEA FILE=HCAPLUS ABB=ON PLU=ON L10 OR L11 OR DICHLORODIFLUOROMETHAN?
L13 SEL PLU=ON L2 1- CHEM : 30 TERMS
L14 SEL PLU=ON L4 1- CHEM : 11 TERMS
L15 3844 SEA FILE=HCAPLUS ABB=ON PLU=ON L13
L16 3816 SEA FILE=HCAPLUS ABB=ON PLU=ON L14
L17 3971 SEA FILE=HCAPLUS ABB=ON PLU=ON L15 OR L16 OR DIFLUOROMETHAN?

L18 519 SEA FILE=HCAPLUS ABB=ON PLU=ON L12 AND L17
L19 2374 SEA FILE=HCAPLUS ABB=ON PLU=ON L5 OR PALLIDIUM?
L20 1176747 SEA FILE=HCAPLUS ABB=ON PLU=ON L6 OR ALUMINUM?
L21 1845904 SEA FILE=HCAPLUS ABB=ON PLU=ON L7 OR CATALYST
L22 127 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND (L19 OR L20 OR L21)
L23 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND ?HYDRODECHLORIN?
L24 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND L23

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=>

=> d ibib abs hitstr 124 1-41

L24 ANSWER 1 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:921541 HCPLUS
 DOCUMENT NUMBER: 142:299783
 TITLE: Effect of tungsten addition to Pd/ZrO₂ system in the hydrodechlorination activity of CCl₂F₂
 AUTHOR(S): Murthy, J. Krishna; Shekar, S. Chandra; Kumar, V. Siva; Raju, B. David; Sreedhar, B.; Prasad, P. S. Sai; Rao, P. Kanta; Rao, K. S. Rama; Berry, F. J.; Smart, L. E.
 CORPORATE SOURCE: Catalysis Section, Indian Institute of Chemical Technology, Hyderabad, 500007, India
 SOURCE: Journal of Molecular Catalysis A: Chemical (2004), 223(1-2), 347-351
 CODEN: JMCCF2; ISSN: 1381-1169
 PUBLISHER: Elsevier B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The catalytic activity of Pd on W-ZrO₂ in the hydrodechlorination of CCl₂F₂ was studied by varying the WO₃ content. The TPR results of Pd/W-ZrO₂ were related to effects caused by contact with hydrogen. XRD data of spent catalysts show that there is no change in the structure of zirconia, indicating that these catalysts are highly resistant to the corrosive reaction atmospheric. Addition of tungsten to the Pd/ZrO₂ system led to the formation of CHClF₂ (HCFC-22) in the hydrodechlorination of CCl₂F₂. Thus, the role of WO₃ is to catalyze the partial dechlorination of CCl₂F₂.
 IT 75-71-8, Dichlorodifluoromethane
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (effect of tungsten addition to palladium/zirconia catalyst in hydrodechlorination of)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5, HFC-32
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (effect of tungsten addition to palladium/zirconia catalyst in hydrodechlorination of dichlorodifluoromethane to)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 2 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:921539 HCAPLUS
 DOCUMENT NUMBER: 142:318716
 TITLE: Role of hydrotalcite precursors as supports for Pd catalysts in hydrodechlorination of CC12F2
 AUTHOR(S): Padmasri, A. H.; Venugopal, A.; Kumar, V. Siva; Shashikala, V.; Nagaraja, B. M.; Seetharamulu, P.; Sreedhar, B.; Raju, B. David; Rao, P. Kanta; Rao, K. S. Rama
 CORPORATE SOURCE: Catalysis and Physical Chemistry Division, Indian Institute of Chemical Technology, Hyderabad, Andhra Pradesh, 500007, India
 SOURCE: Journal of Molecular Catalysis A: Chemical (2004), 223(1-2), 329-337
 CODEN: JMCCF2; ISSN: 1381-1169
 PUBLISHER: Elsevier B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The selective synthesis of CH2F2 by hydrodechlorination of CC12F2 was studied over calcined Mg-Al and Mg-Cr hydrotalcites (CMA-HT and CMC-HT) supported Pd catalysts. The activity of the catalysts was compared to that of oxides, MgO, γ -Al2O3, and Cr2O3 supported Pd catalysts. The Pd catalyst on Mg-Al HT support has higher stability and selectivity towards CH2F2. The catalyst followed the order: Pd/CMA-HT > Pd/MgO > Pd/ γ -Al2O3 > Pd/Cr2O3 > Pd/CMC-HT in terms of selectivity towards CH2F2. The Pd/CMC-HT catalyst showed deeper hydrogenation activity towards formation of CH4. The Pd/CMA-HT and Pd/MgO catalysts showed higher increase in acidity after the reaction, which stabilizes the Pd sites in electron deficient environments leading to higher selectivity towards CH2F2. The lack of sufficient acidity on Pd/CMC explains the poor selectivity to CH2F2 observed. XPS results confirm the enrichment of surface fluoride over Pd/CMA-HT and Pd/MgO used catalysts.
 IT 1344-28-1, Alumina, uses 11137-98-7, Aluminum magnesium oxide
 RL: CAT (Catalyst use); USES (Uses)
 (hydrotalcite; role of structure of Mg-Al and Mg-Cr hydrotalcite supports for Pd catalysts in hydrodechlorination of dichlorodifluoromethane to difluoromethane)
 RN 1344-28-1 HCAPLUS
 CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

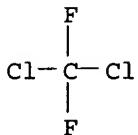
RN 11137-98-7 HCAPLUS
 CN Aluminum magnesium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Mg	x	7439-95-4
Al	x	7429-90-5

IT 75-10-5P, Difluoromethane
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (role of structure of Mg-Al and Mg-Cr hydrotalcite supports for Pd catalysts in hydrodechlorination of dichlorodifluoromethane to difluoromethane)
 RN 75-10-5 HCAPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, **Dichlorodifluoromethane**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (role of structure of Mg-Al and Mg-Cr hydrotalcite supports for Pd
 catalysts in hydrodechlorination of
 dichlorodifluoromethane to difluoromethane)
 RN 75-71-8 HCAPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)

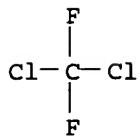


REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 3 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:657818 HCAPLUS
 TITLE: **Hydrodechlorination of CCl₂F₂ using Pd supported on g-Al₂O₃ catalysts**
 AUTHOR(S): Sridara, Chandra Shekar; Rao, K. S. Rama; Sahle-Demessie, Endalkachew
 CORPORATE SOURCE: National Risk Management Research Laboratory, US Environmental Protection Agency, Cincinnati, OH, 45268, USA
 SOURCE: Abstracts of Papers, 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004 (2004), IEC-017. American Chemical Society: Washington, D. C.
 CODEN: 69FTZ8
 DOCUMENT TYPE: Conference; Meeting Abstract
 LANGUAGE: English
 AB Chlorofluorocarbons, have been implicated in the accelerated depletion of ozone in the Earth's stratosphere. Research groups have been working for effective conversion of the CFCs in to useful compds. Selective hydrodechlorination of CFCs has been identified as a useful process for their transformation as it yields either HCFCs or HFCs that have low or almost zero ozone depletion potential value. Hydrofluorocarbons (HFCs), potential replacements for CFCs that contain no chlorine, have been evaluated for potential effects of fluorine compds. on ozone destruction. Selective hydrodechlorination of CCl₂F₂ (CFC-12) yields CH₂F₂ (HFC-32). In the selective hydrogenolysis of CCl₂F₂, Pd supported on g-Al₂O₃, active carbon, etc were used. In this study, alumina supported palladium catalysts are prepared by wet impregnation technique with varying Pd loading. The catalysts after drying are calcined at 400°C for 4h in hydrogen flow to obtain Pd in poorly dispersed state. These catalysts are tested for their activity and selectivity in the hydrogenolysis of CCl₂F₂ to CH₂F₂. Low dispersed Pd/g-Al₂O₃ catalysts are obtained by H₂ reduction of the catalysts at 400°C. Transmission electron microscope revealed that there is a strong redispersion of palladium is taking place during the reaction. Studies on

the effect of palladium loading on the activity and selectivity in the conversion of CCl_2F_2 to CH_2F_2 and CH_4 have shown that 8wt% Pd on g- Al_2O_3 is optimum in giving maximum CH_2F_2 yields.

L24 ANSWER 4 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:595799 HCPLUS
DOCUMENT NUMBER: 141:279346
TITLE: Studies on the modifications of Pd/ Al_2O_3 and Pd/C systems to design highly active catalysts for hydrodechlorination of CFC-12 to HFC-32
AUTHOR(S): Shekhar, S. Chandra; Murthy, J. Krishna; Rao, P. Kanta; Rao, K. S. Rama
CORPORATE SOURCE: Catalysis and Physical Chemistry Division, Indian Institute of Chemical Technology, Hyderabad, 5007, India
SOURCE: Applied Catalysis, A: General (2004), 271(1-2), 95-101
CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review highlighting the various modifications of the support for Pd catalysts to enhance the hydrodechlorination ability in hydrodechlorination of dichlorodifluoromethane (CFC-12) to synthesize dichlorodifluoromethane (HFC-32). The supports studied for the modification are either alumina (Al_2O_3) or carbon. In the modification of oxidic support, especially Al_2O_3 , the main objective is to prevent to the maximum extent the transformation of oxidic support to the corresponding oxy/hydroxy fluorides due to the release of HF during the course of hydrodehalogenation reaction. Modification of Al_2O_3 support has been achieved by covering with carbon, called carbon-covered alumina (CCA), and simultaneous coverage with carbon and fluorine, called fluorinated carbon-covered alumina (FCCA). In the case of carbon as support, even though Pd/C exhibits good conversion in the hydrodehalogenation of CCl_2F_2 , the selectivity towards HFC-32 is poor, and hence the modification of carbon support is aimed to enhance the selectivity towards HFC-32. Modification of carbon support has been achieved by incorporation of either MgO , ZrO_2 , or Al_2O_3 .
IT 1344-28-1, Alumina, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst support and modifier for carbon support; modifications of alumina- and carbon-supported palladium catalytic systems to design highly active catalysts for hydrodechlorination of dihydronifluoromethane to difluoromethane)
RN 1344-28-1 HCPLUS
CN Aluminum oxide (Al_2O_3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT 75-71-8, CFC 12
RL: RCT (Reactant); RACT (Reactant or reagent)
(modifications of alumina- and carbon-supported palladium catalytic systems to design highly active catalysts for hydrodechlorination of dihydronifluoromethane to HFC-32)
RN 75-71-8 HCPLUS
CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 7440-44-0, Carbon, uses

RL: CAT (Catalyst use); USES (Uses)

(modifications of alumina- and carbon-supported palladium catalytic systems to design highly active catalysts for hydrodechlorination of dihydrodifluoromethane to difluoromethane)

RN 7440-44-0 HCAPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 75-10-5, HFC 32

RL: RCT (Reactant); RACT (Reactant or reagent)

(modifications of alumina- and carbon-supported palladium catalytic systems to design highly active catalysts for hydrodechlorination of dihydrodifluoromethane to difluoromethane)

RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 5 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:315867 HCAPLUS

DOCUMENT NUMBER: 141:90860

TITLE:

Selective hydrodechlorination of dichlorodifluoromethane over supported palladium phthalocyanine catalysts

AUTHOR(S): Cao, Yucai; Li, Jianlong; Jiang, Xuanzhen

CORPORATE SOURCE: Shanghai Research Institute of Chemical Industry, Shanghai, 200062, Peop. Rep. China

SOURCE: Huagong Xuebao (Chinese Edition) (2004), 55(3), 373-378

PUBLISHER: CODEN: HUKHAI; ISSN: 0438-1157

DOCUMENT TYPE: Huaxue Gongye Chubanshe, Huagong Xuebao Bianjibu Journal

LANGUAGE: Chinese

OTHER SOURCE(S): CASREACT 141:90860

AB Supported palladium phthalocyanine was found to be an interesting catalyst with good catalytic stability for selective conversion of CCl₂F₂ into CH₂F₂. Particularly, supported palladium phthalocyanine exhibited excellent stability even at low H₂/CCl₂F₂ ratio in the corrosive reaction conditions due to the formation of HCl and HF. Relatively high selectivities towards CH₂F₂ formation (>75%) over palladium phthalocyanine catalysts with fluoride supports were achieved. The fractionally

reduced palladium in palladium phthalocyanine was suggested to be the main active site for catalytic hydrodechlorination.

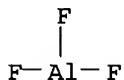
IT 1344-28-1, Alumina, uses 7440-44-0, Carbon, uses
7784-18-1, Aluminum fluoride
RL: CAT (Catalyst use); USES (Uses)
(selective hydrodechlorination of
dichlorodifluoromethane over supported palladium phthalocyanine
catalysts)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

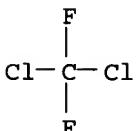
RN 7784-18-1 HCAPLUS
CN Aluminum fluoride (AlF3) (9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane
RL: IMF (Industrial manufacture); PREP (Preparation)
(selective hydrodechlorination of
dichlorodifluoromethane over supported palladium phthalocyanine
catalysts)
RN 75-10-5 HCAPLUS
CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-71-8, Dichlorodifluoromethane
RL: RCT (Reactant); RACT (Reactant or reagent)
(selective hydrodechlorination of
dichlorodifluoromethane over supported palladium phthalocyanine
catalysts)
RN 75-71-8 HCAPLUS
CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



TITLE: Homogeneous catalytic hydrodechlorination of CFC and HCFC compounds
 AUTHOR(S): Sisak, Attila; Simon, Otto; Balazs, Nyiri, Karoly
 CORPORATE SOURCE: Research Group for Petrochemistry, Hungarian Academy of Sciences, Veszprem, H-8201, Hung.
 SOURCE: Journal of Molecular Catalysis A: Chemical (2004), 213(2), 163-168
 CODEN: JMCCF2; ISSN: 1381-1169
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 141:107887

AB Rhodium and palladium complexes proved to be effective catalysts in hydrodechlorination of CFC and HCFC compds. in homogeneous phase. $\text{RhCl}_3(\text{py})_3$ and in situ generated $\text{Pd}(\text{Pipr}_3)_3$ surpassed $\text{Pd}/\text{Al}_2\text{O}_3$, the most active heterogeneous catalyst tested in the transformation of CF_3CHFCl to $\text{CF}_3\text{CH}_2\text{F}$. In the case of CF_2Cl_2 , the activity and selectivity of Rh- and Pd-containing systems depended strongly on the additives.

IT 1344-28-1, Alumina, uses 14694-95-2,
 Tris(triphenylphosphine)rhodium chloride

RL: CAT (Catalyst use); USES (Uses)
 (homogeneous palladium- and rhodium-based catalyst systems for hydrodechlorination of chlorofluorocarbons and hydrochlorofluorocarbons)

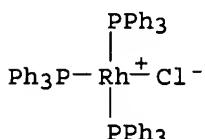
RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al_2O_3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 14694-95-2 HCAPLUS

CN Rhodium, chlorotris(triphenylphosphine)-, (SP-4-2)- (9CI) (CA INDEX NAME)

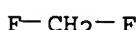


IT 75-10-5, Difluoromethane 75-71-8,
 Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
 (homogeneous palladium- and rhodium-based catalyst systems for hydrodechlorination of chlorofluorocarbons and hydrochlorofluorocarbons)

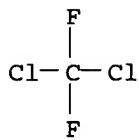
RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 7440-44-0, Carbon, uses
 RL: CAT (Catalyst use); USES (Uses)
 (support; homogeneous palladium- and rhodium-based **catalyst**
 systems for **hydrodechlorination** of chlorofluorocarbons and
 hydrochlorofluorocarbons)
 RN 7440-44-0 HCAPLUS
 CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

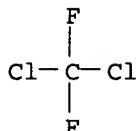
L24 ANSWER 7 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:149518 HCAPLUS
 DOCUMENT NUMBER: 140:392627
 TITLE: Advantages of FCCA and Bi promotion in Bi-Pd/FCCA
 catalysts for the **hydrodechlorination**
 of CCl₂F₂
 AUTHOR(S): Murthy, J. Krishna; Shekar, S. Chandra; Rao, K. S.
 Rama; Kishan, G.; Niemantsverdriet, J. W.
 CORPORATE SOURCE: Catalysis Section, Indian Institute of Chemical
 Technology, Hyderabad, 500 007, India
 SOURCE: Applied Catalysis, A: General (2004), 259(2), 169-178
 CODEN: ACAGE4; ISSN: 0926-860X
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The incorporation of bismuth in fluorinated carbon covered alumina (FCCA) supported Pd **catalysts** has shown to increase significantly the catalytic activity in the **hydrodechlorination** of CCl₂F₂ and CH₂F₂ selectivity. During the preparation of FCCA, the formation of α -AlF₃ and carbon coverage on alumina has helped in creating the extra acidity and in minimizing the support active component interaction resp. XRD data show the formation of interacted species, BiPd₃ between Pd and Bi. XPS anal. shows that in Pd/FCCA spent **catalyst**, Pd is transformed into Pd halides whereas in the Bi-Pd/FCCA spent **catalysts** Pd maintains its metallic state even in presence of corrosive reaction atmospheric Bi-promoted **catalysts** exhibited higher selectivity towards CH₂F₂ at Bi/Pd=0.5 and good thermal stability in the **hydrodechlorination** of CCl₂F₂.

IT 75-10-5P, Difluoromethane
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (Bi promotion of fluorinated carbon covered alumina supported Pd
 catalysts for CCl₂F₂ **hydrodechlorination**)
 RN 75-10-5 HCAPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, **Dichlorodifluoromethane**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (Bi promotion of fluorinated carbon covered alumina supported Pd
 catalysts for CC₂F₂ hydrodechlorination)
 RN 75-71-8 HCAPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1D, **Alumina, fluorinated carbon covered alumina**
 RL: CAT (Catalyst use); USES (Uses)
 (support; Bi promotion of fluorinated carbon covered alumina supported
 Pd catalysts for CC₂F₂ hydrodechlorination)
 RN 1344-28-1 HCAPLUS
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 8 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:137905 HCAPLUS
 DOCUMENT NUMBER: 140:425199
 TITLE: Promotional effect of magnesia addition to active
 carbon supported Pd catalyst on the
 characteristics and hydrodechlorination
 activity of CC₂F₂
 AUTHOR(S): Murthy, J. Krishna; Shekar, S. Chandra; Padmasri, A.
 H.; Venugopal, A.; Kumar, V. Siva; Nagaraja, B. M.;
 Shashikala, V.; Raju, B. David; Rao, P. Kanta; Rao, K.
 S. Rama
 CORPORATE SOURCE: Catalysis and Physical Chemistry Division, Indian
 Institute of Chemical Technology, Hyderabad, 500 007,
 India
 SOURCE: Catalysis Communications (2004), 5(3), 161-167
 CODEN: CCAOAC; ISSN: 1566-7367
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Magnesia modified active carbon supported palladium (Pd-MgO/C)
 catalyst prepared by co-impregnation, has shown superior activity in
 the hydrodechlorination of CC₂F₂ to produce CH₂F₂ in greater
 yields compared to Pd/C and Pd/MgO catalysts. The high activity
 of Pd-MgO/C catalyst is due to the synergistic effect of Pd/C
 and Pd/MgO components. CO chemisorption results indicate the formation of
 bigger particles of Pd in Pd-MgO/C catalyst and the formation of
 MgF₂ from MgO (on reaction with HF released during the reaction), induce
 electron deficient surface so that the rate of the desorption of
 intermediate CF₂* adsorbed species is more facile yielding CH₂F₂.
 IT 7440-44-0, Carbon, uses

RL: CAT (Catalyst use); USES (Uses)
(Activated; promotional effect of magnesia addition to active carbon supported Pd catalyst on characteristics and hydrodechlorination activity of CCl₂F₂)

RN 7440-44-0 HCAPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

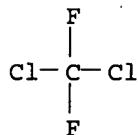
C

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
(promotional effect of magnesia addition to active carbon supported Pd catalyst on characteristics and hydrodechlorination activity of CCl₂F₂)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane

RL: SPN (Synthetic preparation); PREP (Preparation)
(promotional effect of magnesia addition to active carbon supported Pd catalyst on characteristics and hydrodechlorination activity of CCl₂F₂)

RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F-CH₂-F

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 9 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:90379 HCAPLUS

DOCUMENT NUMBER: 140:323163

TITLE: Hydrodechlorination of dichlorodifluoromethane (CFC-12) on Pd-Pt/Al₂O₃ catalysts

AUTHOR(S): Legawiec-Jarzyna, Marta; Srebowata, Anna; Juszczyszyn, Wojciech; Karpinski, Zbigniew

CORPORATE SOURCE: Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, PL-01224, Pol.

SOURCE: Catalysis Today (2004), 88(3-4), 93-101
CODEN: CATTEA; ISSN: 0920-5861

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of alumina-supported palladium-platinum catalysts of 1-2.8 weight% overall metal loading were prepared by incipient wetness impregnation and investigated in the reaction of

dichlorodifluoromethane with dihydrogen at 160-180°C. All samples had high metal dispersion, which, in combination with a low metal loading, made phys. characterization of catalysts difficult. Temperature-programmed hydride decomposition, which appeared to be a promising technique for diagnosing the quality of palladium-containing systems, appeared less informative, because, due to high metal dispersion, no tested samples showed a β -PdH phase formation. A 2-2.5-fold increase in hydrodechlorination activity and a considerable enhancement of the selectivity towards difluoromethane (from 46 to .apprx.60%, at 180°C) are obtained upon introducing small amts. (up to 20 atomic%) of platinum to palladium. Further increase of platinum content lowers both the activity and selectivity. This synergistic effect must follow from a considerable effect of interaction between palladium (active component) and platinum (much less active component). CHClF₂ is produced in larger amts. on monometallic 1 weight% Pt/Al₂O₃ catalyst (selectivity 28% at 180°C and higher at lower temps.), whereas Pd and Pd-Pt samples form only small amts. of this product. This suggests that the catalytic behavior of palladium is largely preserved in the bimetallic samples. As, after reaction the most active and selective Pd-Pt catalysts (with 10 and 20 atomic% Pt) contained lesser amts. of carbon than the other (less active) catalysts, it is considered that small amts. of platinum introduced (to palladium) are beneficial for maintaining the catalyst surface less blocked by carbon species, and in effect, more active.

IT 75-10-5P, HFC-32

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(from hydrodechlorination of dichlorodifluoromethane on Pd-Pt/Al₂O₃ catalysts)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 1344-28-1, Alumina, uses

RL: CAT (Catalyst use); USES (Uses)
(hydrodechlorination of dichlorodifluoromethane on Pd-Pt/Al₂O₃ catalysts)

RN 1344-28-1 HCPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

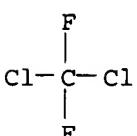
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 75-71-8, CFC-12

RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrodechlorination of dichlorodifluoromethane on Pd-Pt/Al₂O₃ catalysts)

RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT:

36

THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

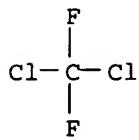
L24 ANSWER 10 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:960242 HCPLUS
 DOCUMENT NUMBER: 141:245119
 TITLE: Transformation of Chlorofluorocarbons Through
 Catalytic Hydrodehalogenation
 AUTHOR(S): Rao, P. Kanta; Rao, K. S. Rama; Padmasri, A. Hari
 CORPORATE SOURCE: Catalysis and Physical Chemistry Division, Indian
 Institute of Chemical Technology, Hyderabad, 500007, India
 SOURCE: CATTECH (2003), 7(6), 218-225
 CODEN: CATTFB; ISSN: 1384-6566
 PUBLISHER: Kluwer Academic/Plenum Publishers
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 AB A review. Catalytic hydrogenolysis is effective for conversion of ozone-depleting chlorofluorocarbons into ozone-benign substances. Selective hydrodechlorination of CFC-12 yields HFC-32, which has zero ozone depletion potential, and is suitable for use as deep refrigerant. Various Pd catalyst/support systems were evaluated and found suitable for selective hydrodechlorination of CCl₂F₂. Bimetallic catalysts, e.g., Pd-Bi, Pd-Sb, Pd-Ag, and Pd-Ru, significantly suppressed the formation of CH₄, except for Ru-Pd/carbon-coated alumina support. The catalysts showed long-term stability with almost constant conversion and selectivity levels for up to 50 h.
 IT 7440-44-0, Carbon, uses
 RL: CAT (Catalyst use); USES (Uses)
 (alumina-coated support; hydrodechlorination of chlorofluorocarbons with Pd catalysts into ozone-benign refrigerants)
 RN 7440-44-0 HCPLUS
 CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 75-10-5P, HFC-32
 RL: PNU (Preparation, unclassified); PREP (Preparation)
 (hydrodechlorination of chlorofluorocarbons with Pd catalysts into ozone-benign refrigerants)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrodechlorination of chlorofluorocarbons with Pd catalysts into ozone-benign refrigerants)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, uses

RL: CAT (Catalyst use); USES (Uses)
 (support of carbon-coated; hydrodechlorination of
 chlorofluorocarbons with Pd catalysts into ozone-benign
 refrigerants)

RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 11 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:451652 HCAPLUS

DOCUMENT NUMBER: 139:324987

TITLE: Hydrodechlorination of
 dichlorodifluoromethane (CFC-
 12) over Pd/Al₂O₃ and Pd-Au/Al₂O₃
 catalysts

AUTHOR(S): Legawiec-Jarzyna, Marta; Srebowata, Anna; Karpinski, Zbigniew

CORPORATE SOURCE: Institute of Physical Chemistry of the Polish Academy of Sciences, Warsaw, PL-01224, Pol.

SOURCE: Reaction Kinetics and Catalysis Letters (2003), 79(1), 157-163

CODEN: RKCLAU; ISSN: 0133-1736

PUBLISHER: Akademiai Kiado

DOCUMENT TYPE: Journal

LANGUAGE: English

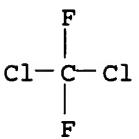
AB During an initial stage of the reaction of CC₂F₂ with hydrogen on alumina-supported Pd and Pd-Au catalysts, an extensive defluorination occurs. However, at steady state, this undesired defluorination is greatly reduced; CH₄ and CH₂F₂ constitute the only major reaction products. A temperature programmed hydrogen treatment study shows retention of fluorine (and carbon) in used catalysts.

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
 (CFC-12; hydrodechlorination of
 dichlorodifluoromethane (CFC-12) over
 Pd/Al₂O₃ and Pd-Au/Al₂O₃ catalysts)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, uses

RL: CAT (Catalyst use); USES (Uses)
 (catalyst support; hydrodechlorination of
 dichlorodifluoromethane (CFC-12) over
 Pd/Al₂O₃ and Pd-Au/Al₂O₃ catalysts)

RN 1344-28-1 HCAPLUS
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 75-10-5, Difluoromethane
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (hydrodechlorination product of
 dichlorodifluoromethane (CFC-12) over
 Pd/Al₂O₃ and Pd-Au/Al₂O₃ catalysts)

RN 75-10-5 HCAPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 12 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:319493 HCAPLUS
 DOCUMENT NUMBER: 138:323029
 TITLE: Synthesis of highly-active Al-modified carbon-supported palladium catalyst
 INVENTOR(S): Murthy, Janmanchi K.; Shekar, Sridara C.; Ramarao, Kamaraju S.; Raju, Burri D.; Raghavan, Kondapuram V.
 PATENT ASSIGNEE(S): India
 SOURCE: U.S. Pat. Appl. Publ., 4 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003078461	A1	20030424	US 2001-983230	20011023
US 6624109	B2	20030923		
EP 1308206	A1	20030507	EP 2001-309134	20011029
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2003126692	A2	20030507	JP 2001-332138	20011030
PRIORITY APPLN. INFO.: US 2001-983230				A 20011023

OTHER SOURCE(S): CASREACT 138:323029

AB The title catalyst is made by simultaneously impregnating activated C with a Pd precursor and an Al precursor. The C-supported Pd catalyst is useful for the hydrodechlorination of dichlorodifluoromethane to produce difluoromethane. The combined beneficial properties of both alumina and palladium and activated carbon to secure greater dispersion of alumina are an added advantage. The conversion of CFC-12 is on the order of 85% and the selectivity to HFC-32 is on the order of 85% at atmospheric pressure.

IT 1344-28-1, Alumina, uses

RL: CAT (Catalyst use); USES (Uses)
 (highly-active Al-modified carbon-supported palladium catalyst)

for hydrodechlorination of dichlorodifluoromethane
to difluoromethane)

RN 1344-28-1 HCPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); PREP (Preparation)
(highly-active Al-modified carbon-supported palladium catalyst
for hydrodechlorination of dichlorodifluoromethane
to difluoromethane)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

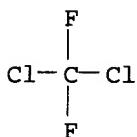


IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrodechlorination; highly-active Al-modified
carbon-supported palladium catalyst for
hydrodechlorination of dichlorodifluoromethane to
difluoromethane)

RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)

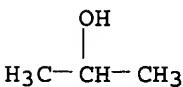


IT 555-31-7, Aluminum isopropoxide

RL: CAT (Catalyst use); USES (Uses)
(precursor; highly-active Al-modified carbon-supported palladium
catalyst for hydrodechlorination of
dichlorodifluoromethane to difluoromethane)

RN 555-31-7 HCPLUS

CN 2-Propanol, aluminum salt (9CI) (CA INDEX NAME)



●1/3 Al

IT 7440-44-0, Carbon, processes

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);
PYP (Physical process); PROC (Process); USES (Uses)
(support; highly-active Al-modified carbon-supported palladium
catalyst for hydrodechlorination of
dichlorodifluoromethane to difluoromethane)

RN 7440-44-0 HCPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

L24 ANSWER 13 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:313302 HCPLUS
DOCUMENT NUMBER: 139:86949
TITLE: Selective hydrogenolysis of
dichlorodifluoromethane (CCl₂F₂)
over CCA supported palladium bimetallic
catalysts
AUTHOR(S): Chandra Shekar, S.; Krishna Murthy, J.; Kanta Rao, P.;
Rama Rao, K. S.; Kemnitz, E.
CORPORATE SOURCE: Catalysis Section, Indian Institute of Chemical
Technology, Hyderabad, 500007, India
SOURCE: Applied Catalysis, A: General (2003), 244(1), 39-48
CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 139:86949

AB The effect of La, Bi, Sb, Sn, Ba, and Zn promoters on the activity of carbon covered alumina (CCA) supported Pd catalysts for the hydrogenolysis of CCl₂F₂ was investigated. Bi and Sb promoters improve not only the thermal stability, but also the selectivity to CH₂F₂. The Sn-promoted catalyst exhibits high selectivity to CHClF₂. The improved activity arises from intermetallic compound formation as evidenced by the XRD and TPR data on the bimetallic catalysts. The effect of the promoters was screened in terms of partial dehalogenation activity and thermal stability for hydrodechlorination of CCl₂F₂ to maximize CH₂F₂ yield.

IT 1344-28-1, Alumina, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(selective hydrodechlorination of CCl₂F₂ to CH₂F₂ using
promoted Pd/C/Al₂O₃ catalysts)
RN 1344-28-1 HCPLUS
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

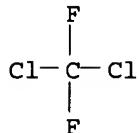
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7440-44-0 HCPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 75-10-5P, Difluoromethane
RL: IMF (Industrial manufacture); PREP (Preparation)
(selective hydrodechlorination of CCl₂F₂ to CH₂F₂ using
promoted Pd/C/Al₂O₃ catalysts)
RN 75-10-5 HCPLUS
CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (selective hydrodechlorination of CCl_2F_2 to CH_2F_2 using
 promoted Pd/C/ Al_2O_3 catalysts)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

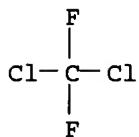
L24 ANSWER 14 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:144624 HCPLUS
 DOCUMENT NUMBER: 138:357495
 TITLE: Catalytic removal of chlorine from organic compounds
 AUTHOR(S): Karpinski, Zbigniew; Pielaszek, Jerzy; Bonarowska, Magdalena
 CORPORATE SOURCE: Institute of Physical Chemistry of PAS, Warsaw, PL-01224, Pol.
 SOURCE: Prace Naukowe Instytutu Chemii i Technologii Nafty i Węgla Politechniki Wrocławskiej (2002), 57, 137-142
 CODEN: PNTNAI
 PUBLISHER: Oficyna Wydawnicza Politechniki Wrocławskiej
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Several C-supported, bimetallic Pd-Au systems were prepared and screened as catalysts for the hydrodechlorination of dichlorodifluoromethane (CFC-12). Since catalytic behavior depends very much on the extent of Pd-Au alloying, it was necessary to ensure proper conditions for mutual interaction of both alloy components after their deposition on the support. The direct redox reaction, which involves a reductive deposition of Au ions on pre-reduced Pd material appeared very useful. Characterizing these catalysts by x-ray diffraction and other methods showed a higher degree of Pd-Au interaction than that in Pd-Au/C catalysts prepared by impregnation. Kinetic studies indicated an intimate contact of Pd and Au is essential to improve selectivity to difluoromethane (from .apprx.70% for Pd/C to .apprx.90% for Pd-Au/C catalysts prepared by direct redox method). Large amts. of C originated from the CFC-12 mol. enter Pd lattice during hydrodechlorination. During the reaction, part of this C can be hydrogenated from the catalyst, giving rise to higher selectivity toward CH_4 . Well-mixed, highly selective toward CH_2F_2 , Pd-Au catalysts absorb much less C.

IT 75-10-5, Difluoromethane
 RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
 (air pollution control and hydrofluorocarbon synthetic preparation by selective catalytic removal of chlorine from CFC12 via hydrodechlorination)

RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, CFC12
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); POL (Pollutant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process)
 (air pollution control and hydrofluorocarbon synthetic preparation by selective catalytic removal of chlorine from CFC12 via hydrodechlorination)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 7440-44-0, Carbon, uses
 RL: CAT (Catalyst use); USES (Uses)
 (palladium and gold supported by activated; air pollution control and hydrofluorocarbon synthetic preparation by selective catalytic removal of chlorine from CFC12 via hydrodechlorination)
 RN 7440-44-0 HCPLUS
 CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 15 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:981426 HCPLUS
 DOCUMENT NUMBER: 138:273265
 TITLE: Pd supported on fluorinated carbon covered alumina (FCCA) a high performance catalyst in the hydrodechlorination of dichlorodifluoromethane
 AUTHOR(S): Chandra Shekar, S.; Krishna Murthy, J.; Kanta Rao, P.; Rama Rao, K. S.
 CORPORATE SOURCE: Catalysis Section, Indian Institute of Chemical Technology, Hyderabad, 500 007, India
 SOURCE: Catalysis Communications (2003), 4(2), 39-44
 CODEN: CCAOAC; ISSN: 1566-7367
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 138:273265
 AB A catalyst based on Pd deposited on fluorocarbon covered alumina (Pd/FCCA) exhibited high activity in hydrodechlorination of CC₂F₂ and high selectivity toward CH₂F₂ compared to those of Pd supported on carbon covered alumina (Pd/CCA), Pd/C, and Pd/Al₂O₃ under identical reaction conditions. The formation of α -AlF₃ and carbon coverage on

Al₂O₃, during the preparation of FCCA by cracking of fluorobenzene on Al₂O₃ resulted in minimizing the support-active component interactions and stabilized the support. The hydrodechlorination reaction is of interest in transformation of chlorofluorocarbons, e.g., for disposal, to ozone-friendly hydrofluorocarbons.

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); PREP (Preparation)
(role of acidic AlF₃ sites of fluorinated carbon-alumina support in activity of Pd catalyst in hydrodechlorination of dichlorodifluoromethane)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

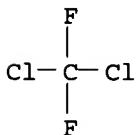


IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
(role of acidic AlF₃ sites of fluorinated carbon-alumina support in activity of Pd catalyst in hydrodechlorination of dichlorodifluoromethane)

RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)

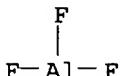


IT 7784-18-1P, Aluminum fluoride (AlF₃)

RL: CAT (Catalyst use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(support acidic species; role of acidic AlF₃ sites of fluorinated carbon-alumina support in activity of Pd catalyst in hydrodechlorination of dichlorodifluoromethane)

RN 7784-18-1 HCPLUS

CN Aluminum fluoride (AlF₃) (9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, processes

RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(support; role of acidic AlF₃ sites of fluorinated carbon-alumina support in activity of Pd catalyst in hydrodechlorination of dichlorodifluoromethane)

RN 1344-28-1 HCPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

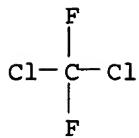
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 16 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:925032 HCPLUS
 DOCUMENT NUMBER: 138:239655
 TITLE: Selective hydrogenolysis of
 dichlorodifluoromethane on carbon covered
 alumina supported palladium catalyst
 AUTHOR(S): Chandra Shekar, S.; Krishna Murthy, J.; Kanta Rao, P.;
 Rama Rao, K. S.
 CORPORATE SOURCE: Catalysis Section, Indian Institute of Chemical
 Technology, Hyderabad, 500 007, India
 SOURCE: Journal of Molecular Catalysis A: Chemical (2003),
 191(1), 45-59
 CODEN: JMCCF2; ISSN: 1381-1169
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB γ -Alumina is modified by carbon coverage and the resulting
 carbon-covered alumina (CCA) is used in the preparation of supported Pd
 catalysts with varying Pd loadings. The prepared catalysts
 have been characterized by BET surface area, CO chemisorption, X-ray
 diffraction (XRD), and temperature programmed reduction (TPR). The catalytic
 activities have been tested for the selective hydrogenolysis of
 dichlorodifluoromethane to difluoromethane. TPR studies
 reveal that fresh Pd/CCA catalysts at lower Pd loading (up to 4
 weight%) exhibit features of Pd/Al₂O₃ (decomposition of β -PdHx) along with
 Pd/C (reaction of Cl- with hydrogen) and beyond 4 weight%, only Pd/C features
 are observed. TPR of spent catalysts reveals an increase in the
 intensity of β -PdHx with increase in Pd loading, indicating the
 reorganization of Pd particles during the course of the
 hydrodechlorination. TPR of CCA and active carbon supports showed
 that the nature of the carbon is somewhat different in CCA and active
 carbon. XRD data have shown that some uncovered alumina is converted into
 its hydroxide fluoride. High selectivity to HFC-32
 (.apprx.95%) over 4 weight% Pd/CCA catalyst at 220°C is
 attributed to the beneficial role of carbon coverage on the
 γ -alumina.
 IT 75-10-5P, HFC-32
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (catalysts for selective hydrogenolysis of
 dichlorodifluoromethane to)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (catalysts for selective hydrogenolysis to
 difluoromethane)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, uses 7440-44-0, Carbon, uses
 RL: CAT (Catalyst use); USES (Uses)
 (in catalyst for selective hydrogenolysis of
 dichlorodifluoromethane)

RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7440-44-0 HCAPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 17 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:790762 HCAPLUS

DOCUMENT NUMBER: 138:153130

TITLE: Hydrodechlorination of
 dichlorodifluoromethane (CFC-
 12) on silica-supported palladium and
 palladium-gold catalysts

AUTHOR(S): Malinowski, A.

CORPORATE SOURCE: Institute of Physical Chemistry of the Polish Academy
 of Sciences, Warsaw, PL-01224, Pol.

SOURCE: Polish Journal of Chemistry (2002), 76(10), 1461-1466
 CODEN: PJCHDQ; ISSN: 0137-5083

PUBLISHER: Polish Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 138:153130

AB Silica-supported palladium and palladium-gold catalysts were
 screened in the reaction of dichlorodifluoromethane with
 dihydrogen at 180°C. The Au-containing sample appeared superior as far
 as the selectivity towards difluoromethane (desired reaction
 product) is concerned (95% vs. .apprx.30% for Pd/SiO₂). A comparative
 X-ray diffraction study of the catalysts, before and after
 reaction, confirmed our earlier findings that during the
 hydrodechlorination massive amts. of carbon originated from CCl₂F₂
 dissolve in palladium. However, a similar conclusion cannot be drawn from
 XRD studies of the Pd-Au/SiO₂ catalyst, because upon entering Pd
 bulk both gold and carbon may produce analogous shifts of the XRD
 reflections. For that reason, temperature programmed hydrogenation of carbon
 deposited in the Pd and a Pd-Au catalyst was used. In contrast
 to the behavior of monometallic Pd/SiO₂, only insignificant quantity of
 carbon was found in the bimetallic Pd-Au/SiO₂ sample subjected to
 hydrodechlorination. This result supports the idea that a
 complete hydrodehalogenation of CCl₂F₂ to methane would occur via bare
 carbon ad-species. Thus, one can associate a superior catalytic behavior of

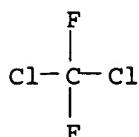
Pd-Au alloy catalysts (selectivity to CH₂F₂ .apprx.95%) with a low abundance of Cl ad-species.

IT 75-71-8, CFC-12

RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrodechlorination of dichlorodifluoromethane (CFC-12) on silica-supported palladium and palladium-gold catalysts)

RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane

RL: SPN (Synthetic preparation); PREP (Preparation)
(hydrodechlorination of dichlorodifluoromethane (CFC-12) on silica-supported palladium and palladium-gold catalysts)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 18 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:652725 HCPLUS

DOCUMENT NUMBER: 137:354672

TITLE: Hydrodechlorination of dichlorodifluoromethane over novel CrF₃ supported palladium catalysts

AUTHOR(S): Cao, Yu Cai; Jiang, Xuan Zhen

CORPORATE SOURCE: Department of Chemistry, Zhejiang University, Hangzhou, 310027, Peop. Rep. China

SOURCE: Indian Journal of Chemistry, Section A: Inorganic, Bio-inorganic, Physical, Theoretical & Analytical Chemistry (2002), 41A(8), 1607-1611

CODEN: ICACEC; ISSN: 0376-4710

PUBLISHER: National Institute of Science Communication

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Novel CrF₃ supported palladium catalysts have been prepared through two different precursors i.e. dichlorobistriphenylphosphine palladium (DCTPPP) and PdCl₂ for the hydrodechlorination of CFC-12. These catalysts exhibited improved catalytic activities in hydrodechlorination of CFC-12 as compared with conventional Pd/γ-Al₂O₃. Particularly, high selectivities (.apprx.81%) of CH₂F₂ formation have been achieved over DCTPPP/CrF₃. The improved catalytic performance may be attributed to the nature of support CrF₃ and the formation of fine palladium particles in the catalysts.

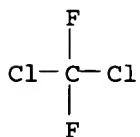
IT 75-71-8, Cfc 12

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(hydrodechlorination of CFC-12 over CrF3 supported palladium)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)

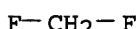


IT 75-10-5, Difluoromethane

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative) (hydrodechlorination of CFC-12 over CrF3 supported palladium)

RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 19 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:502388 HCAPLUS

DOCUMENT NUMBER: 137:264692

TITLE: Pd-Au/Sibunit Carbon Catalysts: Characterization and Catalytic Activity in Hydrodechlorination of Dichlorodifluoromethane (CFC-12)

AUTHOR(S): Bonarowska, M.; Pielaszek, J.; Semikolenov, V. A.; Karpinski, Z.

CORPORATE SOURCE: Department of Catalysis on Metals, Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, PL-01224, Pol.

SOURCE: Journal of Catalysis (2002), 209(2), 528-538

CODEN: JCTLA5; ISSN: 0021-9517

PUBLISHER: Elsevier Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of Sibunit C-supported Pd-Au catalysts prepared by various methods were characterized and investigated for hydrodechlorination of CFC-12. The selectivity to CH₂F₂ was increased with the introduction of Au to the Pd catalyst; however, this enhancement depends very much on the degree of Pd-Au alloying. For catalysts prepared by the direct redox method, the selectivity increased from <70% for Pd to nearly 90% for bimetallic catalysts at 180°. This high selectivity enhancement was not observed for catalysts prepared by impregnation methods.

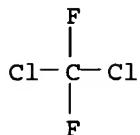
IT 75-71-8, CFC-12

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(selective hydrodechlorination of CFC-12
to CH₂F₂ using C-supported Pd-Au catalysts)

RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); PREP (Preparation)
(selective hydrodechlorination of CFC-12
to CH₂F₂ using C-supported Pd-Au catalysts)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 20 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:496411 HCPLUS

DOCUMENT NUMBER: 137:249458

TITLE: Supported palladium phthalocyanine catalysts
in hydrodechlorination of CCl₂F₂

AUTHOR(S): Cao, Yu Cai; Jiang, Xuan Zhen

CORPORATE SOURCE: Department of Chemistry, Zhejiang University, Yuquan,
Hangzhou, 310027, Peop. Rep. ChinaSOURCE: Journal of Molecular Catalysis A: Chemical (2002),
184(1-2), 183-189

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Supported palladium phthalocyanine was found to be an interesting catalyst with good stability for selective conversion of CCl₂F₂ into CH₂F₂ under flowing hydrogen. Relatively high selectivities towards CH₂F₂ formation over palladium phthalocyanine catalysts with fluoride supports were achieved at limited conversion levels (<10%). Particularly, supported palladium phthalocyanine exhibited excellent stability even at low H₂/CCl₂F₂ molar ratio in the corrosive reaction conditions due to the formation of HCl and HF. The fractionally reduced palladium in palladium phthalocyanine was suggested to be the main active site for the catalytic hydrodechlorination.

IT 1344-28-1, Alumina, uses 7440-44-0, Carbon, uses

7784-18-1, Aluminum trifluoride

RL: CAT (Catalyst use); USES (Uses)
(supported palladium phthalocyanine catalysts in
hydrodechlorination of CCl₂F₂)

RN 1344-28-1 HCPLUS

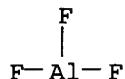
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

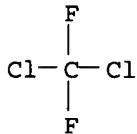
RN 7784-18-1 HCAPLUS
CN Aluminum fluoride (AlF₃) (9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane
RL: IMF (Industrial manufacture); PREP (Preparation)
(supported palladium phthalocyanine catalysts in
hydrodechlorination of CCl₂F₂)
RN 75-10-5 HCAPLUS
CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-71-8, Dichlorodifluoromethane
RL: RCT (Reactant); RACT (Reactant or reagent)
(supported palladium phthalocyanine catalysts in
hydrodechlorination of CCl₂F₂)
RN 75-71-8 HCAPLUS
CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 21 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:435326 HCAPLUS
DOCUMENT NUMBER: 137:156404
TITLE: Highly selective zirconium oxychloride modified Pd/C catalyst in the hydrodechlorination of dichlorodifluoromethane to difluoromethane
AUTHOR(S): Murthy, J. Krishna; Shekar, S. Chandra; Kumar, V. Siva; Rao, K. S. Rama
CORPORATE SOURCE: C & PC Division, Indian Institute of Chemical Technology, Hyderabad, 500 007, India
SOURCE: Catalysis Communications (2002), 3(4), 145-149
CODEN: CCAOAC; ISSN: 1566-7367
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Zirconium oxychloride-modified active carbon-supported palladium catalysts appear to be a promising system in the hydrodechlorination of CCl_2F_2 to yield CH_2F_2 in greater yields, showing an altogether different product distribution compared to Pd/C and Pd/ZrO₂ catalysts. The catalysts have been characterized by BET-surface area, CO-chemisorption, X-ray diffraction, temperature-programmed reduction anal., and fluorine contents in used catalysts. The interaction of Zr species with Pd and the formation of fluorinated zirconium species during the course of reaction led to the higher selectivity towards CH_2F_2 .

IT 7440-44-0, Norit, uses

RL: CAT (Catalyst use); USES (Uses)
(activated; zirconyl chloride-modified Pd/C catalyst for hydrodechlorination of dichlorodifluoromethane to difluoromethane)

RN 7440-44-0 HCAPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); PREP (Preparation)
(zirconyl chloride-modified Pd/C catalyst for hydrodechlorination of dichlorodifluoromethane to)

RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

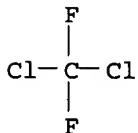
F—CH₂—F

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
(zirconyl chloride-modified Pd/C catalyst for hydrodechlorination of dichlorodifluoromethane to difluoromethane)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 22 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:134536 HCAPLUS
 DOCUMENT NUMBER: 136:385857
 TITLE: Hydrodechlorination of Freon R-12 (CCl_2F_2) over Pd-Au bimetallic catalysts supported on various active carbons
 AUTHOR(S): Bonarowska, Magdalena; Menegazzo, Federica; Juszczyszyn, J.

CORPORATE SOURCE: Wojciech; Karpinski, Zbigniew
 Zakl. Katalizy na Metalach, Inst. Chem. Fiz., PAN,
 Warsaw, 01-224, Pol.

SOURCE: Chemia i Inżynieria Ekologiczna (2001), 8(11),
 1121-1127

PUBLISHER: Towarzystwo Chemii i Inżynierii Ekologicznej
 DOCUMENT TYPE: Journal
 LANGUAGE: Polish

AB Different kinds of active carbon were used as a support in preparation of bimetallic Pd-Au catalysts. These carbons differed in respect of sp. surface area and porous structure. Preparation methods allowed to achieve a considerable extent of bimetal mixing in the supported catalysts. The Pd/C and Pd-Au/C catalysts were tested in the reaction of hydrodechlorination of CFC-12 (CCl₂F₂). Generally, addition of Au to Pd/C introduces a marked increase in the selectivity towards CH₂F₂ (desired reaction product). However, the kind of carbon support was a primary importance for the course of hydrodehalogenation. Application of active carbon characterized by a high surface area and microporous structure led to the selectivity to CH₂F₂ inferior to that obtained for carbons with a larger proportion of meso- and macropores. It is speculated that a significant part of a highly dispersed (bi)metal located in micropores catalyzes undesired consecutive reaction of hydrodehalogenation of CH₂F₂ to methane.

IT 7440-44-0, Activated carbon, uses

RL: CAT (Catalyst use); USES (Uses)
 (activated; hydrodechlorination of Freon R-12 over Pd-Au bimetallic catalysts supported on various active carbons)

RN 7440-44-0 HCAPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

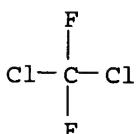
C

IT 75-71-8, r 12

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (hydrodechlorination of Freon R-12 over Pd-Au bimetallic catalysts supported on various active carbons)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5, Difluoromethane

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (hydrodechlorination of Freon R-12 over Pd-Au bimetallic catalysts supported on various active carbons).

RN 75-10-5 HCAPLUS

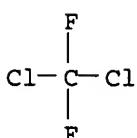
CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

L24 ANSWER 23 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:883498 HCAPLUS
 DOCUMENT NUMBER: 136:221173
 TITLE: **Hydrodechlorination of CFC-12 over novel supported palladium catalysts**
 AUTHOR(S): Cao, Yu Cai; Jiang, Xuan Zhen; Song, Wei Hong; Bai, Zhan Qi; Fang, Xiao Qing
 CORPORATE SOURCE: Department of Chemistry, Zhejiang University, Hangzhou, 310027, Peop. Rep. China
 SOURCE: *Catalysis Letters* (2001), 76(1-2), 53-57
 CODEN: CALEER; ISSN: 1011-372X
 PUBLISHER: Kluwer Academic/Plenum Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Novel supported palladium **catalysts** were prepared through organometallic Pd compds. including dichlorobistriphenylphosphine palladium (DCTPPP) and dithiocyanatobistriphenylphosphine palladium (DTTPPP) for the **hydrodechlorination of CFC-12**. These **catalysts** exhibited excellent catalytic activities in **hydrodechlorination of CFC-12**. Particularly, high selectivities of CH₂F₂ formation were achieved over the **catalysts**, DCTPPP/MgF₂ with 88.1% and DTTPPP/MgF₂ with 85.8%, at a limited conversion level (<5%). No obvious deactivation was observed for DCTPPP/MgF₂ and DTTPPP/MgF₂ **catalysts** within 60 h. The higher catalytic activity, CH₂F₂ selectivity and **catalyst** stability may be mainly attributed to high dispersions of palladium.

IT 75-71-8, Cfc 12
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (hydrodechlorination of CFC-12 over supported palladium **catalysts**)
 RN 75-71-8 HCAPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5, Difluoromethane
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (hydrodechlorination of CFC-12 over supported palladium **catalysts**)
 RN 75-10-5 HCAPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

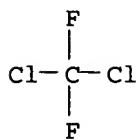
F—CH₂—F

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 24 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:861368 HCPLUS
 DOCUMENT NUMBER: 136:236105
 TITLE: **Hydrodechlorination of CCl₂F₂ (CFC-12) over Pd-Au/C catalysts**
 AUTHOR(S): Bonarowska, M.; Burda, B.; Juszczak, W.; Pielaszek, J.; Kowalczyk, Z.; Karpinski, Z.
 CORPORATE SOURCE: Institute of Physical Chemistry, Department of Catalysis on Metals, Polish Academy of Sciences, Warsaw, 01-224, Pol.
 SOURCE: Applied Catalysis, B: Environmental (2001), 35(1), 13-20
 CODEN: ACBEE3; ISSN: 0926-3373
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Several C-supported Pd-Au catalysts prepared by direct redox reaction method and characterized by various techniques were examined for the reaction of dichlorodifluoromethane (CFC-12) with H₂. Selectivity towards difluoromethane (the desired reaction product) was increased upon introducing Auto Pd, from .apprx.72 to .apprx.86%, at 180°. Such a selectivity enhancement was not observed in previous studies when Pd-Au/C catalysts prepared by incipient wetness impregnation showed inadequate extent of Pd-Au alloying. Prepare conditions for Pd-Au/C catalysts by the direct redox reaction method affected the amount of deposited metals and the degree of Pd-Au mixing. The latter factor is essential in determining catalyst hydrodehalogenation behavior.
 IT 75-10-5, **Difluoromethane**
 RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
 (metal content and catalyst composition effect on hydrodechlorination of dichlorodifluoromethane over carbon-supported palladium-gold catalyst prepared by direct redox reaction method)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, CFC12
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); POL (Pollutant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process)
 (metal content and catalyst composition effect on hydrodechlorination of dichlorodifluoromethane over carbon-supported palladium-gold catalyst prepared by direct redox reaction method)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 7440-44-0, Carbon, uses

RL: CAT (Catalyst use); USES (Uses)
 (palladium and gold supported by; metal content and catalyst composition effect on hydrodechlorination of dichlorodifluoromethane over carbon-supported palladium-gold catalyst prepared by direct redox reaction method)

RN 7440-44-0 HCAPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 25 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:566384 HCAPLUS

DOCUMENT NUMBER: 136:169361

TITLE: Modified palladium catalysts for hydrodechlorination of Freons

AUTHOR(S): Bonarowska, Magdalena; Juszczyszyn, Wojciech; Malinowski, Artur; Karpinski, Zbigniew

CORPORATE SOURCE: Inst. Chem. Fiz., PAN, Warsaw, 01-224, Pol.

SOURCE: Adsorpcja i Kataliza w Ochronie Srodowiska, Prace Ogolnopolskiego Mikrosympozjum Tematycznego, 8th, Poznan, Poland, Dec. 1, 2000 (2000), 7-12. Editor(s): Sarbak, Zenon. Uniwersytet im. Adama Mickiewicza, Wydzial Chemii: Poznan, Pol.

CODEN: 69BPT4

DOCUMENT TYPE: Conference

LANGUAGE: Polish

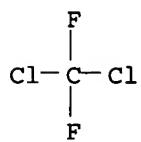
AB Catalytic hydrodechlorination of Freon 12 (CCl₂F₂) in the presence of Au-modified Pd catalyst (Pd-Au/SiO₂) was studied with the aim to determine the usefulness of the incorporation of Au into the catalyst. Using the Au-Pd alloy instead of pure Pd resulted in an increase of the reaction selectivity towards CH₂F₂ from apprx.40% to 90%. The SiO₂ support is not chemical resistant towards HF and cannot be, therefore, used under technol. conditions, but the beneficial addition of Au was proven.

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
 (gold promoter for palladium catalysts for hydrodechlorination of dichlorodifluoromethane)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (gold promoter for palladium catalysts for
 hydrodechlorination of dichlorodifluoromethane to)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



L24 ANSWER 26 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:503377 HCPLUS
 DOCUMENT NUMBER: 135:226559
 TITLE: Novel catalytic hydrodechlorination of
 CCl_2F_2 over supported $\text{PdCl}_2\text{-}(\text{n-C}_4\text{H}_9)_4\text{N}^+\text{Cl}^-$ molten
 salts
 AUTHOR(S): Cao, Yu Cai; Jiang, Xuan Zhen
 CORPORATE SOURCE: Department of Chemistry, Zhejiang University,
 Hangzhou, 310027, Peop. Rep. China
 SOURCE: Chinese Chemical Letters (2001), 12(6), 533-536
 PUBLISHER: Chinese Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 135:226559

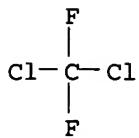
AB A novel supported liquid phase film catalyst, i.e., supported
 PdCl_2 -tetrabutylammonium chloride molten salts was found to be an
 effective catalyst with good stability for selective
 hydrodechlorination of CCl_2F_2 (CFC-12) to its
 alternatives CH_2F_2 and CHClF_2 . Addition of CoCl_2 , GaCl_3 and CuCl_2 to
 $\text{PdCl}_2\text{-}(\text{n-C}_4\text{H}_9)_4\text{N}^+\text{Cl}^-$ modifies the catalytic performance of supported
 molten salts.

IT 7440-44-0, Carbon, uses
 RL: CAT (Catalyst use); USES (Uses)
 (activated; preparation of palladium dichloride-tetrabutylammonium chloride
 on activated carbon catalysts and their use for
 hydrodechlorination of chlorofluorocarbons)
 RN 7440-44-0 HCPLUS
 CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of palladium dichloride-tetrabutylammonium chloride on
 activated carbon catalysts and their use for
 hydrodechlorination of chlorofluorocarbons)
 RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane

RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of palladium dichloride-tetrabutylammonium chloride on
 activated carbon catalysts and their use for
 hydrodechlorination of chlorofluorocarbons)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 27 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:444186 HCPLUS

DOCUMENT NUMBER: 135:244026

TITLE: Palladium hydrotalcites as precursors for the
 catalytic hydroconversion of CCl₂F₂ (CFC-
 12) and CHClF₂ (HCFC-22)AUTHOR(S): Morato, A.; Alonso, C.; Medina, F.; Cesteros, Y.;
 Salagre, P.; Sueiras, J. E.; Tichit, D.; Coq, B.CORPORATE SOURCE: ETSEQ, Departament d'Enginyeria Quimica, Universitat
 Rovira i Virgili, Tarragona, 43005, SpainSOURCE: Applied Catalysis, B: Environmental (2001), 32(3),
 167-179PUBLISHER: CODEN: ACBEE3; ISSN: 0926-3373
 Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The preparation of Pd hydrotalcite-like materials and their catalytic properties for hydroconversion of CFC-12 and HCFC-22 are reported. These materials are catalysts for selective hydrodechlorination reactions. The influence of reaction temperature and H/CFC ratio on the hydrogenolysis was investigated. In the reaction of CFC-12, the main products are CH₂F₂, CH₄ and CHClF₂. For HCFC-22, the products are CH₂F₂, CHF₃ and CH₄. The highest conversion and selectivity to CH₂F₂ are attained on heavily loaded Pd catalysts. High H/CFC ratios favor the formation of CH₂F₂. During the reaction, the formation of fluoride and Pd-carbide phases were detected.

IT 222632-88-4, Aluminum magnesium palladium oxide

RL: CAT (Catalyst use); USES (Uses)
 (chlorofluorocarbon hydroconversion to CH₂F₂ using Pd hydrotalcite catalysts)

RN 222632-88-4 HCPLUS

CN Aluminum magnesium palladium oxide (9CI) (CA INDEX NAME)

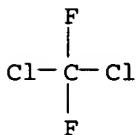
Component	Ratio	Component
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		Registry Number
O	x	17778-80-2
Pd	x	7440-05-3
Mg	x	7439-95-4
Al	x	7429-90-5

IT 75-10-5P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (chlorofluorocarbon hydroconversion to CH₂F₂ using Pd hydrotalcite catalysts)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (chlorofluorocarbon hydroconversion to CH₂F₂ using Pd hydrotalcite catalysts)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 28 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:566729 HCPLUS
 DOCUMENT NUMBER: 133:251922
 TITLE: Hydrodechlorination of CC₁₂F₂ (CFC-12) by carbon- and MgF₂-supported palladium and palladium-gold catalysts
 AUTHOR(S): Malinowski, A.; Juszczyszyn, W.; Pielaszek, J.; Bonarowska, M.; Wojciechowska, M.; Karpinski, Z.
 CORPORATE SOURCE: Institute of Physical Chemistry of PAS, Warsaw, PL-01224, Pol.
 SOURCE: Studies in Surface Science and Catalysis (2000), 130C (International Congress on Catalysis, 2000, Pt. C), 1991-1996
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB C- and MgF₂-supported Pd catalysts exhibited comparable activity, selectivity pattern and stability in hydrodechlorination of CC₁₂F₂. Selective hydrodehalogenation to CH₂F₂ was a prevailing reaction. Introduction of Au to supported Pd catalysts produced different results, depending on whether Pd/C or Pd/MgF₂ was doped. In the case of Au addition to 2 weight% Pd/MgF₂, the selectivity for CH₂F₂ was considerably enhanced, from approx. 72 to 86%, whereas analogous

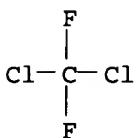
modification of 1 weight% Pd/C caused only insignificant changes. TPR and XRD studies of the catalysts indicated considerable differences in the extent of the homogeneity of the Pd-Au bimetal; the degree of alloying was substantially higher for the former catalyst. This suggests that an intimate contact between Pd and Au is essential for improving the selectivity for CH₂F₂. XRD of spent catalysts showed C incorporation into a Pd lattice. A majority of this C can be removed by a short H₂ purge at 200°.

IT 75-71-8, CFC 12

RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrodechlorination of dichlorodifluoromethane (CFC-12) by carbon- and MgF₂-supported palladium and palladium-gold catalysts)

RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane

RL: SPN (Synthetic preparation); PREP (Preparation)
(hydrodechlorination of dichlorodifluoromethane (CFC-12) by carbon- and MgF₂-supported palladium and palladium-gold catalysts)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 29 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:494704 HCPLUS

DOCUMENT NUMBER: 133:209600

TITLE: Microwave irradiation: an effective method for the preparation of low dispersed Pd/Al₂O₃ catalysts used in the

hydrodechlorination of CCl₂F₂ to CH₂F₂

AUTHOR(S): Prasad, P. S. Sai; Lingaiah, N.; Chandrasekhar, S.; Rao, K. S. Rama; Rao, P. Kanta; Raghavan, K. V.; Berry, F. J.; Smart, L. E.

CORPORATE SOURCE: Catalysis and Physical Chemistry Division, Indian Institute of Chemical Technology, Hyderabad, 500 007, India

SOURCE: Catalysis Letters (2000), 66(4), 201-204
CODEN: CALEER; ISSN: 1011-372X

PUBLISHER: Baltzer Science Publishers

DOCUMENT TYPE: Journal

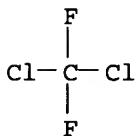
LANGUAGE: English

AB Microwave irradiation is used to prepare low dispersed Pd/Al₂O₃ catalysts with high activity and selectivity to CH₂F₂ in the hydrodechlorination of CCl₂F₂.

IT 75-10-5P, HFC 32
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (microwave irradiation in preparation of low dispersed Pd/Al2O3
 catalysts for CCl2F2 hydrodechlorination to CH2F2)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, CFC 12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (microwave irradiation in preparation of low dispersed Pd/Al2O3
 catalysts for CCl2F2 hydrodechlorination to CH2F2)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 30 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:361318 HCPLUS
 DOCUMENT NUMBER: 133:152239
 TITLE: Hydrodechlorination of
 Dichlorodifluoromethane over Palladium Model
 Catalysts and a Comparison with the
 Hydrodechlorination of 1,1-
 Dichlorotetrafluoroethane
 AUTHOR(S): Ramos, Andre L. D.; Schmal, Martin; Aranda, Donato A.
 G.; Somorjai, Gabor A.
 CORPORATE SOURCE: Department of Chemistry, and Materials Sciences
 Division, Lawrence Berkeley National Laboratory,
 University of California, Berkeley, CA, 94720-1460,
 USA
 SOURCE: Journal of Catalysis (2000), 192(2), 423-431
 CODEN: JCTLA5; ISSN: 0021-9517
 PUBLISHER: Academic Press
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The hydrodechlorination of CCl₂F₂ (CFC-12)
 was performed on small surface area model catalysts, including
 Pd(111) and Pd(110) single crystals and polycryst. Pd foil. The reactions
 were performed in a batch reactor at atmospheric pressure and 423-523 K. The
 main products were CH₂F₂ and CH₄. Ethane was detected at higher temps.
 Lower deactivation rates and higher activation energy for CH₂F₂ formation
 were achieved with Pd(111). In a comparison with
 dichlorotetrafluoroethane hydrodechlorination, the rate of
 CFC-12 dechlorination was 2 orders of magnitude lower,
 the mono-dechlorinated product (CHClF₂) was not produced, and the bulk Pd
 hydrogen activity was not detected. (c) 2000 Academic Press.
 IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); PREP (Preparation)
 (hydrodechlorination of CCl_2F_2 to CH_2F_2 over crystalline Pd catalysts)

RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

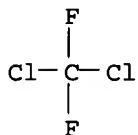
$\text{F}-\text{CH}_2-\text{F}$

IT 75-71-8, Dichlorodifluoromethane

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (hydrodechlorination of CCl_2F_2 to CH_2F_2 over crystalline Pd catalysts)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 31 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:652224 HCAPLUS

DOCUMENT NUMBER: 131:302890

TITLE: Conversion under hydrogen of dichlorodifluoromethane and

chlorodifluoromethane over nickel catalysts

AUTHOR(S): Morato, A.; Alonso, C.; Medina, F.; Salagre, P.; Sueiras, J. E.; Terrado, R.; Giralt, A.

CORPORATE SOURCE: Escola Tècnica Superior d'Enginyeria Química, Universitat Rovira i Virgili, Tarragona, Spain

SOURCE: Applied Catalysis, B: Environmental (1999), 23(2-3), 175-185

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB We have studied the conversion of CFC-12 and HCFC-22 with hydrogen between 523 and 563 K at atmospheric pressure, over Ni, graphite-supported Ni (NiGr), activated-carbon-supported Ni (NiAC), Ni-potassium oxide (NiKAC), Ni-copper (NiCuAC) and Ni-aluminum oxide (NiAlAC) catalysts reduced at 623 K. Bulk nickel, NiAC, and NiAlAC catalysts suffered an increase in activity during the first 15 h on stream, while NiGr, NiCuAC and NiKAC suffered a decrease in activity during this first period for the hydrodehalogenation reaction of HCFC-22. The bulk nickel catalyst showed the highest activity, measured as TOF, for the conversion of CFC-12 and HCFC-22 with hydrogen. This could be due to the different morphol. of the nickel particles for this catalyst. During this first 15 h on stream, metal nickel phase is totally transformed into nickel carbide only for the NiAlAC catalyst. The new Ni₃C phase seems to be more active than the nickel phase for the hydroconversion of CFC-

12 and HCFC-22. This Ni₃C phase has not been detected by XRD for the other catalysts. However, their formation at the surface level is not excluded. The best hydrodehalogenation reactions are those which first allow the removal of one chlorine atom during one sojourn on the surface of the catalysts, and then allow the removal of two new halogen atoms. More dimerization compds. are also obtained as products, mainly for the hydrodechlorination of CFC-12. These dimerization reactions strongly compete with the hydrodehalogenation reaction with nickel catalysts. We propose a consecutive mechanism for the hydrogenation of CFC-12 and HCFC-22 using nickel catalysts.

IT 7440-44-0, Carbon, uses

RL: CAT (Catalyst use); USES (Uses)
(activated; conversion under hydrogen of dichlorodifluoromethane and chlorodifluoromethane over nickel catalysts containing)

RN 7440-44-0 HCAPLUS

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 7440-02-0, Nickel, uses

RL: CAT (Catalyst use); USES (Uses)
(conversion under hydrogen of dichlorodifluoromethane and chlorodifluoromethane over nickel catalysts)

RN 7440-02-0 HCAPLUS

CN Nickel (8CI, 9CI) (CA INDEX NAME)

Ni

IT 75-10-5, Difluoromethane

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(conversion under hydrogen of dichlorodifluoromethane and chlorodifluoromethane over nickel catalysts)

RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

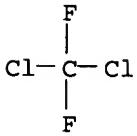
F—CH₂—F

IT 75-71-8, Cfc 12

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(conversion under hydrogen of dichlorodifluoromethane and chlorodifluoromethane over nickel catalysts)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

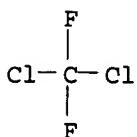
L24 ANSWER 32 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1999:502941 HCAPLUS
 DOCUMENT NUMBER: 131:215830
 TITLE: **Hydrodechlorination of CFC-12 over fluorinated Pd/Al2O3 catalyst**
 AUTHOR(S): Jeon, Sang Gu; Shul, Yong Gun; Lee, Hyunjoo; Ahn, Byoung Sung
 CORPORATE SOURCE: CFC Alternative Research Center, Korea Institute of Science and Technology, Seoul, S. Korea
 SOURCE: Hwahak Konghak (1999), 37(1), 103-107
 CODEN: HHKHAT; ISSN: 0304-128X
 PUBLISHER: Korean Institute of Chemical Engineers
 DOCUMENT TYPE: Journal
 LANGUAGE: Korean
 AB The hydrodechlorination of CFC-12 (CF2Cl2) was studied using fluorinated Pd/Al2O3 catalysts. The catalysts were fluorinated by using HCFC-22 (CHF2Cl) or reduced by H before the reaction. They were characterized by BET, XRD and TEM before and after reaction. The activity and selectivity to HFC-32 (CH2F2) of the 2 catalysts were compared. The fluorinated catalyst gave better performance.
 IT 1344-28-1, Alumina, uses
 RL: CAT (Catalyst use); USES (Uses)
 (hydrodechlorination of CFC-12 to CH2F2 over fluorinated Pd/Al2O3 catalyst)
 RN 1344-28-1 HCAPLUS
 CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 75-10-5P, HFC-32
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (hydrodechlorination of CFC-12 to CH2F2 over fluorinated Pd/Al2O3 catalyst)
 RN 75-10-5 HCAPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrodechlorination of CFC-12 to CH2F2 over fluorinated Pd/Al2O3 catalyst)
 RN 75-71-8 HCAPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



L24 ANSWER 33 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:325854 HCAPLUS
 DOCUMENT NUMBER: 130:353927
 TITLE: Supported catalyst for reductive dechlorination of chlorofluorocarbons to produce fluorocarbons
 INVENTOR(S): Freiberg, Jurgen; Zehl, Gerald; Meinke, Martina
 PATENT ASSIGNEE(S): Gesellschaft zur Beseitigung von Umweltschaden mbH, Germany
 SOURCE: PCT Int. Appl., 23 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9924163	A1	19990520	WO 1998-EP7102	19981106
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 19750789	A1	19990520	DE 1997-19750789	19971106
AU 9912334	A1	19990531	AU 1999-12334	19981106
EP 1051251	A1	20001115	EP 1998-955548	19981106
EP 1051251	B1	20030226		
R: BE, DE, ES, FR, GB, GR, IT, NL				
TW 542751	B	20030721	TW 1998-87118492	19990127
PRIORITY APPLN. INFO.:			DE 1997-19750789	A 19971106
			WO 1998-EP7102	W 19981106

OTHER SOURCE(S): MARPAT 130:353927

AB A supported catalyst for producing fluorocarbons by hydrodehalogenating chlorofluorocarbons (CFC's) or halons with hydrogen contains a metal composition Pd_aXbYc [X = group VIII metal; Y = group III or IV or rare-earth metal; a = 0.5 to 100-(b+c); b = > 0 to 100-(a+c); c = > 0 to 100-(a+b); b+c ≠ 0]. Thus, a catalyst containing Pd 10, Os 1, Zr 0.5% on activated charcoal was prepared by treating the activated charcoal with concentrated HCl at 80° for 4 h, adding the required amts. of $PdCl_2$, $OsCl_3$, and $ZrOCl_2$ in 20% HCl and drying the slurry at 120° for 10 h. The catalyst was used to hydrodechlorinate CF_2Cl_2 to CH_2F_2 .

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(supported catalyst for reductive dechlorination of chlorofluorocarbons to produce fluorocarbons)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

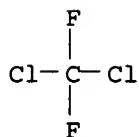
$F-CH_2-F$

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)

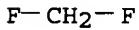
(supported catalyst for reductive dechlorination of

chlorofluorocarbons to produce fluorocarbons)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)

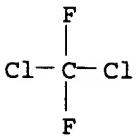


REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 34 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1999:238116 HCPLUS
 DOCUMENT NUMBER: 131:60279
 TITLE: Magnesium fluoride as a catalytic support in hydrodechlorination of CCl_2F_2 (CFC-12)
 AUTHOR(S): Malinowski, A.; Juszczysz, W.; Pielaszek, J.; Bonarowska, M.; Karpinski, Z.; Wojciechowska, M.
 CORPORATE SOURCE: Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, PL-01224, Pol.
 SOURCE: Chemical Communications (Cambridge) (1999), (8), 685-686
 CODEN: CHCOFS; ISSN: 1359-7345
 PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB MgF₂-supported Pd and Ru are useful catalysts for hydrodechlorination of CFC-12 to CH₂F₂. Doping of Pd/MgF₂ with Au increased the selectivity to CH₂F₂ to .apprx.90%.
 IT 75-10-5P, Difluoromethane
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (hydrodechlorination of CFC-12 to CH₂F₂ using Au-promoted Pd/MgF₂ and Ru/MgF₂ catalysts)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrodechlorination of CFC-12 to CH₂F₂ using Au-promoted Pd/MgF₂ and Ru/MgF₂ catalysts)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)

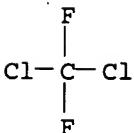


REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 35 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1999:119228 HCPLUS
 DOCUMENT NUMBER: 130:267056
 TITLE: **Hydrodechlorination of 1,1-dichlorotetrafluoroethane and dichlorodifluoromethane catalyzed by Pd on fluorinated aluminas: the role of support material**
 Early, Kintu; Kovalchuk, Vladimir I.; Lonyi, Ferenc; Deshmukh, Subodh; d'Itri, Julie L.
 AUTHOR(S):
 CORPORATE SOURCE: Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, PA, 15261, USA
 SOURCE: Journal of Catalysis (1999), 182(1), 219-227
 CODEN: JCTLA5; ISSN: 0021-9517
 PUBLISHER: Academic Press
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Gas-phase hydrodechlorination of CF₃CFCl₂ (I) to CF₃CH₂F and CF₂Cl₂ to CH₂F₂ catalyzed by Pd supported on Al₂O₃, a series of fluorinated Al₂O₃, and AlF₃ was studied. A combination of reaction kinetics studies and characterization by *in situ* FTIR spectroscopy was used. For reactions involving I, all catalysts exhibit a rapid and significant decrease in activity; however, little change in activity with time on stream occurs with CF₂Cl₂. FTIR studies suggest the occurrence of a direct reaction between the CFC and the support material, which results in the consumption of OH groups during the early stages of reaction. The effect of fluorination of the support on catalytic behavior of Pd is discussed. (c) 1999 Academic Press.
 IT 1344-28-1D, Alumina, fluorinated
 RL: CAT (Catalyst use); USES (Uses)
 (role of support material in hydrodechlorination of dichlorotetrafluoroethane and -difluoromethane catalyzed by palladium on fluorinated aluminas)
 RN 1344-28-1 HCPLUS
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (role of support material in hydrodechlorination of dichlorotetrafluoroethane and -difluoromethane catalyzed by palladium on fluorinated aluminas)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 36 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:506925 HCPLUS
 DOCUMENT NUMBER: 129:177179
 TITLE: Pd-Re/Al₂O₃: characterization and catalytic activity in hydrodechlorination of CCl₂F₂
 AUTHOR(S): Malinowski, A.; Juszczysz, W.; Bonarowska, M.; Pielaszek, J.; Karpinski, Z.
 CORPORATE SOURCE: Department of Catalysis on Metals, Institute of Physical Chemistry of the Polish Academy of Sciences, Warsaw, 01-224, Pol.
 SOURCE: Journal of Catalysis (1998), 177(2), 153-163
 CODEN: JCTLA5; ISSN: 0021-9517
 PUBLISHER: Academic Press
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB A series of Pd-Re/Al₂O₃ catalysts were prepared and characterized using x-ray diffraction, chemisorption, and temperature-programmed methods.

The

catalysts were evaluated for hydrodechlorination of CCl₂F₂. Adding Re to Pd/Al₂O₃ introduces substantial changes in catalytic behavior. All Pd-Re bimetallic samples strongly deactivated with time-onstream, whereas the activity of Pd/Al₂O₃, after an initial increase, was fairly stable. Selectivity patterns for the bimetallic samples also differed from that of Pd, showing an increase in selectivity to CH₄ during the stabilization period. The steady-state activity of Pd-rich (≤ 25 at% Re) bimetallic samples was much lower than that of Pd; however, it increased slightly with further Re addition, reaching a mild maximum at 50 at% Re. The selectivity towards CH₂F₂ changed only slightly with the bimetallic composition (c) 1998 Academic Press.

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); PREP (Preparation)
 (activity and selectivity of Pd-Re/Al₂O₃ catalysts for hydrodechlorination of CCl₂F₂ to CH₂F₂)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

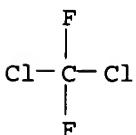
F—CH₂—F

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
 (activity and selectivity of Pd-Re/Al₂O₃ catalysts for hydrodechlorination of CCl₂F₂ to CH₂F₂)

RN 75-71-8 HCPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 37 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:797723 HCPLUS

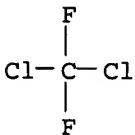
DOCUMENT NUMBER: 128:101705

TITLE: **Hydrodechlorination of CCl₂F₂ (CFC-12) over γ -alumina supported palladium catalysts**
 AUTHOR(S): Juszczysz, W.; Malinowski, A.; Karpinski, Z.
 CORPORATE SOURCE: Institute of Physical Chemistry, Department of Catalysis on Metals, Polish Academy of Sciences, ul. Kasprzaka 44/52, 01-224 Warszawa, Pol.
 SOURCE: Applied Catalysis, A: General (1998), 166(2), 311-319
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Alumina displays low catalytic activity at the initial stage of the reaction of CCl₂F₂ with hydrogen, giving mainly halogen exchange products, and this activity quickly decays with time-onstream. In the case of Pd/Al₂O₃ catalysts, the contribution of the support is negligible at 180°C. Catalytic activity of Pd/ γ -Al₂O₃ in CCl₂F₂ hydrodechlorination strongly depends on metal dispersion: poorly dispersed Pd samples exhibit the highest turnover frequencies. The same samples also show the highest selectivities towards the formation of CH₂F₂. Time-onstream behavior and considerable amounts of carbon found in used catalysts suggest that the catalytic properties of Pd/Al₂O₃ are regulated by incorporation of carbon into Pd lattice, or the formation of Pd carbide. Poorly dispersed Pd catalysts contain a higher proportion of plane atoms and, therefore, are subjected to a more severe carbiding. Such a transformation generates surfaces which bind Freon mols. less strongly, resulting in higher activity and selectivity to partial dehalogenation, i.e. formation of CH₂F₂. High-temperature reduction at 600° does not much change the overall activity of Pd/Al₂O₃. However, the selectivity to CH₂F₂ is somewhat increased. It is believed that the Pd-Al₂O₃ interface changes upon high-temperature reduction, leading

to a Pd-Al compound. At corrosive conditions of hydrodehalogenation of CCl₂F₂, the Pd-Al would be converted to AlFx species much more easily than the Al₂O₃ species at the Pd-Al₂O₃ interface of mildly reduced Pd/Al₂O₃ catalysts.

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrodechlorination of CCl₂F₂ (CFC-12)
 over γ -alumina supported palladium catalysts)
 RN 75-71-8 HCAPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (hydrodechlorination of CCl₂F₂ (CFC-12)
 over γ -alumina supported palladium catalysts)
 RN 75-10-5 HCAPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

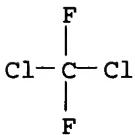
L24 ANSWER 38 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1997:639474 HCPLUS
 DOCUMENT NUMBER: 127:294912
 TITLE: **Hydrodechlorination of CF₂Cl₂ (CFC-12) on Pd/Al₂O₃ catalysts**
 AUTHOR(S): Juszczyszyn, W.; Malinowski, A.; Bonarowska, M.; Karpinski, Z.
 CORPORATE SOURCE: Department of Catalysis on Metals, Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, 01-224, Pol.
 SOURCE: Polish Journal of Chemistry (1997), 71(9), 1314-1320
 CODEN: PJCHDQ; ISSN: 0137-5083
 PUBLISHER: Polish Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The hydro-dechlorination of CF₂Cl₂ was studied in the presence of dispersed alumina-supported palladium catalysts. The catalytic activity of α -Al₂O₃- and γ -Al₂O₃-supported palladium was comparable, however, palladium supported on α -Al₂O₃ appeared to be more selective towards CF₂H₂ than Pd/ γ -Al₂O₃. Since α -Al₂O₃ is markedly less porous than γ -Al₂O₃, lower selectivity towards partial hydro-dehalogenation on Pd/ γ -Al₂O₃ may result from a consecutive reaction of CF₂H₂ to methane. High temperature pretreatment eliminated narrow pores in γ -Al₂O₃, leading to higher selectivity to CF₂H₂. Carbonization deposits on the palladium surface during the reaction, but the catalyst can be re-activated by removal of the deposits, to a level equal to that of fresh catalyst.

IT 75-10-5P, Difluoromethane
 RL: PNU (Preparation, unclassified); PREP (Preparation)
 (hydrodechlorination of CF₂Cl₂ on Pd/Al₂O₃ catalysts
 and effect of alumina phase on activity and selectivity of system)
 RN 75-10-5 HCPLUS
 CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F—CH₂—F

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrodechlorination of CF₂Cl₂ on Pd/Al₂O₃ catalysts
 and effect of alumina phase on activity and selectivity of system)
 RN 75-71-8 HCPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, uses

RL: CAT (Catalyst use); USES (Uses)
(α and γ phases; hydrodechlorination of CF₂Cl₂ on
Pd/Al₂O₃ catalysts and effect of alumina phase on activity
and selectivity of system)

RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 39 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:201270 HCAPLUS

DOCUMENT NUMBER: 124:342345

TITLE: A study on the hydrodechlorination reaction
of dichlorodifluoromethane over Pd/AlF₃
catalystAUTHOR(S): Ahn, Byoung Sung; Lee, Sang Cheol; Moon, Dong Ju; Lee,
Byung GwonCORPORATE SOURCE: CFC Alternatives Technology Center, Korea Institute of
Science and Technology, P.O.Box 131, Cheongryang,
Seoul, S. KoreaSOURCE: Journal of Molecular Catalysis A: Chemical (1996),
106(1-2), 83-91

CODEN: JMCCF2; ISSN: 1381-1169

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

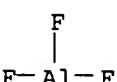
LANGUAGE: English

AB The hydrodechlorination reaction of
dichlorodifluoromethane (CF₂Cl₂) has been studied under an atmospheric
pressure at 130-210° over Pd/AlF₃ catalyst. The effects
of various reaction conditions on the catalyst performance in
terms of the reaction rate and product distributions were extensively
investigated and the adsorption behaviors of H₂, CF₂Cl₂, CHF₂Cl, CH₂F₂ and
CH₃F on the catalyst surface are compared. In addition, the
plausible reaction scheme has been proposed based on the exptl.
observations. Under the assumption that the formation of two main
products, CH₂F₂ and CH₄, proceeds through the hydrogenation of
intermediate species, CF₂, the reaction rate consts. have been calculated by
fitting the exptl. data with the reaction rate expression.

IT 7784-18-1, Aluminum trifluoride

RL: CAT (Catalyst use); USES (Uses)
(hydrodechlorination of dichlorodifluoromethane
over Pd/AlF₃ catalyst)

RN 7784-18-1 HCAPLUS

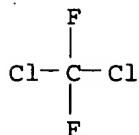
CN Aluminum fluoride (AlF₃) (9CI) (CA INDEX NAME)

IT 75-71-8, Dichlorodifluoromethane

RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT
(Reactant); PROC (Process); RACT (Reactant or reagent)
(hydrodechlorination of dichlorodifluoromethane
over Pd/AlF₃ catalyst)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-10-5P, Difluoromethane

RL: SPN (Synthetic preparation); PREP (Preparation)
 (hydrodechlorination of dichlorodifluoromethane
 over Pd/AlF₃ catalyst)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



L24 ANSWER 40 OF 41 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:690280 HCPLUS

DOCUMENT NUMBER: 123:111543

TITLE: Process and carbide catalysts for the
 hydrodechlorination of chloromethanes

INVENTOR(S): Sherif, Fawzy G.

PATENT ASSIGNEE(S): Akzo Nobel NV, Neth.

SOURCE: U.S., 4 pp.

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5426252	A	19950620	US 1993-138291	19931015
PRIORITY APPLN. INFO.:			US 1993-138291	19931015

OTHER SOURCE(S): CASREACT 123:111543

AB Chloromethanes (e.g., CCl₄, etc.) and chlorofluoromethanes (e.g., Cl₂CF₂, etc.) are hydrodechlorinated (e.g., in the case of Cl₂CF₂ to CHClF₂ and/or H₂CF₂) by treatment with H₂ in the presence of a transition metal carbide catalyst (e.g., Group IVB metal carbides; W carbide) supported on a metal oxide (e.g., alumina optionally with a passivating layer of a ceramic such as Si carbide between the oxide support and catalyst). The catalyst preferably has a surface area of ≥ 1 m²/g.

IT 75-10-5P, Difluoromethane

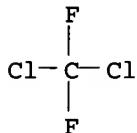
RL: IMF (Industrial manufacture); PREP (Preparation)
 (process and carbide catalysts for the
 hydrodechlorination of chloromethanes)

RN 75-10-5 HCPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)



IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (process and carbide catalysts for the
 hydrodechlorination of chloromethanes)
 RN 75-71-8 HCAPLUS
 CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



IT 1344-28-1, Alumina, uses
 RL: CAT (Catalyst use); USES (Uses)
 (supports; catalysts for hydrodechlorination of
 chloromethanes)
 RN 1344-28-1 HCAPLUS
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L24 ANSWER 41 OF 41 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1993:625415 HCAPLUS
 DOCUMENT NUMBER: 119:225415
 TITLE: Conversion under hydrogen of
 dichlorodifluoromethane over bimetallic
 palladium catalysts
 AUTHOR(S): Coq, Bernard; Hub, Serge; Figueras, Francois;
 Tournigant, Didier
 CORPORATE SOURCE: Laboratoire de Chimie Organique Physique et Cinétique
 Chimique Appliquées, URA 418 CNRS; ENSCM, 8 rue de
 l'Ecole Normale, Montpellier, 34053, Fr.
 SOURCE: Applied Catalysis, A: General (1993), 101(1), 41-50
 CODEN: ACAGE4; ISSN: 0926-860X
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 119:225415

AB The conversion of difluorodichloromethane under hydrogen has
 been studied in the gas phase between 413 and 473 K at atmospheric pressure
 over graphite supported Pd, PdK, PdFe, PdCo and PdAg catalysts
 reduced at 523 K. Neither a stoichiometric phase, nor a solid solution was
 detected in these catalysts. In CF₂Cl₂ hydrogenation at low
 CF₂Cl₂ pressure (P(CF₂Cl₂)/P(H₂)<0.3), CH₂F₂ and CH₄ represent more than
 95% of the products. However, at high CF₂Cl₂ pressure
 (P(CF₂Cl₂)/P(H₂)>2), and over PdFe/graphite or PdCo/graphite
 catalysts, high selectivities for the coupling product CF₂CF₂ were
 obtained. This is probably due to the occurrence of some mixed sites
 between Pd and Fe or Co. The kinetics of the reaction indicates
 adsorption competition between CF₂Cl₂ and H₂ for the active sites, which
 can be described by an halogenation/dehalogenation mechanism of the
 palladium surface by CF₂Cl₂ and hydrogen resp.

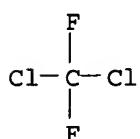
IT 75-10-5P, Difluoromethane
 RL: FORM (Formation, nonpreparative); PREP (Preparation)
 (formation of, via catalytic hydrodechlorination of
 difluorodichloromethane)
 RN 75-10-5 HCAPLUS

CN Methane, difluoro- (8CI, 9CI) (CA INDEX NAME)

F--CH₂--FIT 75-71-8, Difluorodichloromethane
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrodechlorination of, catalysts for)

RN 75-71-8 HCAPLUS

CN Methane, dichlorodifluoro- (8CI, 9CI) (CA INDEX NAME)



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L1	12 SEA FILE=REGISTRY ABB=ON	PLU=ON	CCL2F2/MF
L2	11 SEA FILE=REGISTRY ABB=ON	PLU=ON	CH2F2/MF
L3	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	DICHLORODIFLUOROMETHANE/CN
L4	1 SEA FILE=REGISTRY ABB=ON	PLU=ON	DIFLUOROMETHANE/CN
L5	2927 SEA FILE=REGISTRY ABB=ON	PLU=ON	PALLIDIUM
L6	219466 SEA FILE=REGISTRY ABB=ON	PLU=ON	ALUMINUM
L7	667 SEA FILE=REGISTRY ABB=ON	PLU=ON	CATALYST
L8	SEL PLU=ON L1 1- CHEM :	58	TERMS
L9	SEL PLU=ON L3 1- CHEM :	37	TERMS
L10	11323 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L8
L11	11314 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L9
L12	11323 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L10 OR L11 OR DICHLORODIFLUOROMETHAN?
L13	SEL PLU=ON L2 1- CHEM :	30	TERMS
L14	SEL PLU=ON L4 1- CHEM :	11	TERMS
L15	3844 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L13
L16	3816 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L14
L17	3971 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L15 OR L16 OR DIFLUOROMETHAN?
L18	519 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L12 AND L17
L19	2374 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L5 OR PALLIDIUM?
L20	1176747 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L6 OR ALUMINUM?
L21	1845904 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L7 OR CATALYST
L22	127 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L18 AND (L19 OR L20 OR L21)
L23	41 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L18 AND ?HYDRODECHLORIN?
L24	41 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L22 AND L23
L25	878 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L12 (L) (RCT/RL OR RACT/RL)
L26	114 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L25 AND L17
L27	571 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L12 (L) (HYDRODECHLORIN? OR L19 OR L20 OR L21)
L28	66 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L26 AND L27
L29	32 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L28 NOT L24

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L29 ANSWER 1 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:90386 HCPLUS
 DOCUMENT NUMBER: 140:359268
 TITLE: Dehalogenative oligomerization of dichlorodifluoromethane catalyzed by activated carbon-supported Pt-Cu catalysts: effect of Cu to Pt atomic ratio
 AUTHOR(S): Chakraborty, Debasish; Kulkarni, Parag P.; Kovalchuk, Vladimir I.; d'Itri, Julie L.
 CORPORATE SOURCE: Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, PA, 15261, USA
 SOURCE: Catalysis Today (2004), 88(3-4), 169-181
 CODEN: CATTEA; ISSN: 0920-5861
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Activated carbon-supported Pt-Cu catalysts with a Cu to Pt atomic ratio in the range of 2-18 catalyze the formation of oligomerization hydrocarbon products from an equimolar mixture of CF₂Cl₂ and H₂ at 523 K. The steady-state selectivity toward C₂+ products is 42% for the Pt₁Cu₂/C and increases to more than 70% when the Cu/Pt atomic ratio reaches 18:1. All catalysts deactivate with time on stream. The results of the TEM investigation are consistent with the suggestion that deactivation is attributed to carbon deposition and not to particle sintering. All of the catalysts have approx. the same average size of Pt-containing particles, independent of Cu/Pt atomic ratio, and the average size is essentially the same for the freshly reduced and used Pt-Cu catalysts. As the Cu to Pt atomic ratio is increased, a larger fraction of Cu is unalloyed with Pt. The performance of the catalysts in the CF₂Cl₂ + H₂ reaction is discussed in terms of the different active sites, which catalyze different elementary reaction steps.

IT 7440-44-0, BPL F3, uses
 RL: CAT (Catalyst use); USES (Uses)
 (activated, support; effect of Cu to Pt atomic ratio on dehalogenative oligomerization of dichlorodifluoromethane catalyzed by activated carbon-supported Pt-Cu catalysts)

IT 16941-12-1, Platinic acid (H₂PtCl₆)
 RL: CAT (Catalyst use); USES (Uses)
 (effect of Cu to Pt atomic ratio on dehalogenative oligomerization of dichlorodifluoromethane catalyzed by activated carbon-supported Pt-Cu catalysts)

IT 75-10-5, Difluoromethane
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
 (effect of Cu to Pt atomic ratio on dehalogenative oligomerization of dichlorodifluoromethane catalyzed by activated carbon-supported Pt-Cu catalysts)

IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (effect of Cu to Pt atomic ratio on dehalogenative oligomerization of dichlorodifluoromethane catalyzed by activated carbon-supported Pt-Cu catalysts)

REFERENCE COUNT: 72 THERE ARE 72 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 2 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:926816 HCPLUS

DOCUMENT NUMBER: 140:198917
 TITLE: Conversion of dichlorodifluoromethane with hydrogen over Pd/AlF₃ and Ru/AlF₃ prepared by sol-gel method
 AUTHOR(S): Hina, Rateb H.; Al-Fayyoumi, Rasha Kh.
 CORPORATE SOURCE: Department of Chemical Sciences, Jordan University of Science & Technology, Irbid, 22110, Jordan
 SOURCE: Journal of Molecular Catalysis A: Chemical (2004), 207(1), 27-33
 CODEN: JMCCF2; ISSN: 1381-1169
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The reaction of dichlorodifluoromethane and H was studied in the gas phase at temps. 438-538 K and atmospheric pressure over Pd and Ru supported AlF₃ catalysts prepared by sol-gel method. For the hydrogenation of CF₂Cl₂, CH₂F₂ and CH₄ represented >97% of the products. The catalytic properties of the catalysts are unchanged with time and they showed no significant difference in their activities. At the steady state, the kinetics of the reaction described by a mechanism of a halogenation/dehalogenation of the Pd and Ru surfaces by CF₂Cl₂ and H₂, resp. The values of the resp. rate consts. were then determined. At 448 K, the interaction between the Pd and Ru surfaces with CF₂Cl₂ or H₂ is of the same order of magnitude. The conversion ratio on Ru/Pd supported catalysts within the temperature range used was increased from 1.5 to 4.1, while the selectivity of CH₂F₂/CH₄ ratio was decreased from apprx.17.4 to 1.8 on the surfaces of both catalysts. This leads to the proposition that the high dispersion of Pd and Ru over the support are responsible for the high activity and high selectivity in CH₂F₂.

IT 75-71-8, Dichlorodifluoromethane
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (conversion of dichlorodifluoromethane with hydrogen over Pd/AlF₃ and Ru/AlF₃ prepared by sol-gel method)
 IT 75-10-5P, Difluoromethane
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (conversion of dichlorodifluoromethane with hydrogen over Pd/AlF₃ and Ru/AlF₃ prepared by sol-gel method)
 IT 7784-18-1, Aluminum fluoride (AlF₃)
 RL: CAT (Catalyst use); USES (Uses)
 (support; conversion of dichlorodifluoromethane with hydrogen over Pd/AlF₃ and Ru/AlF₃ prepared by sol-gel method)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:197505 HCAPLUS
 DOCUMENT NUMBER: 137:21727
 TITLE: Novel calcined Mg-Cr hydrotalcite supported Pd catalysts for the hydrogenolysis of CCl₂F₂
 AUTHOR(S): Padmasri, A. H.; Venugopal, A.; Krishnamurthy, J.; Rama Rao, K. S.; Kanta Rao, P.
 CORPORATE SOURCE: Catalysis and Physical Chemistry Division, Indian Institute of Chemical Technology, Hyderabad, 500 007, India
 SOURCE: Journal of Molecular Catalysis A: Chemical (2002), 181(1-2), 73-80
 CODEN: JMCCF2; ISSN: 1381-1169
 PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Pd supported on calcined Mg-Cr hydrotalcite, MgO and Cr₂O₃ are prepared and tested for the hydrogenolysis of CCl₂F₂. It was found that 6% Pd loading is optimum on MgO-Cr₂O₃ hydrotalcite. The hydrogenolysis activities for CCl₂F₂ are found in the order: Pd/HT>Pd/MgO>Pd/Cr₂O₃, while Pd/HT was yielding deep hydrogenation product (CH₄) with more selectivity, Pd/MgO is yielding dechlorination product (CH₂F₂) and Pd/Cr₂O₃ was showing poor activity. It was observed that calcined Mg-Cr hydrotalcite has shown synergy when used as a support for Pd and used for the hydrogenolysis of CCl₂F₂.
 IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (calcined Mg-Cr hydrotalcite supported Pd catalysts for CCl₂F₂ hydrogenolysis)
 IT 75-10-5P, Difluoromethane
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (calcined Mg-Cr hydrotalcite supported Pd catalysts for CCl₂F₂ hydrogenolysis)
 REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2002:22682 HCAPLUS
 DOCUMENT NUMBER: 136:75214
 TITLE: Characterization and Reactivity of Pd/MgO and Pd/γ-Al₂O₃ Catalysts in the Selective Hydrogenolysis of CCl₂F₂
 AUTHOR(S): Aytam, Hari Padmasri; Akula, Venugopal; Janmanchi, Krishnamurthy; Rama Rao, Kamaraju Seetha; Rao, Panja Kanta; Gurram, Kishan; Niemantsverdriet, J. W.
 CORPORATE SOURCE: Catalysis and Physical Chemistry Division, Indian Institute of Chemical Technology, Hyderabad, 500 007, India
 SOURCE: Journal of Physical Chemistry B (2002), 106(5), 1024-1031
 CODEN: JPCBFK; ISSN: 1089-5647
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Al₂O₃ and MgO supported Pd catalysts with 6 wt % loading are prepared by the wet impregnation method. The catalysts are made into two parts; one of them is dried at 110 °C, and the other one is calcined at 500 °C. Conversion of CCl₂F₂ in hydrogen is carried out under identical reaction conditions on both dried and calcined catalysts after the catalysts are prereduced in H₂ at 400 °C for 3h. The fresh and the used catalysts are characterized by BET-surface area, X-ray diffraction (XRD), temperature programmed reduction (TPR), temperature programmed desorption (TPD) of NH₃, and XPS. XPS data shows that surface Pd species are more in MgO supported catalyst than in Al₂O₃ supported one. In used catalysts, surface F- concentration is more on MgO than on Al₂O₃ supported Pd catalyst. The MgO supported Pd catalyst (dried) showed higher reactivity and CH₂F₂ selectivity compared to other catalysts. MgO support is found to be superior to Al₂O₃ support for Pd for the reaction.
 IT 75-71-8, Dichlorodifluoromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (characterization and reactivity of Pd/MgO and Pd/γ-Al₂O₃ catalysts in the selective hydrogenolysis of CCl₂F₂)
 IT 75-10-5P, Difluoromethane
 RL: SPN (Synthetic preparation); PREP (Preparation)

(characterization and reactivity of Pd/MgO and Pd/ γ -Al₂O₃ catalysts in the selective hydrogenolysis of CCl₂F₂)

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 5 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:400082 HCPLUS
 DOCUMENT NUMBER: 135:124107
 TITLE: Catalytic hydrogenolysis of CFC-12
 (CCl₂F₂) over Pd catalyst supported on activated carbon treated with alkali and acids

AUTHOR(S): Park, Young-Ho; Moon, Dong Ju; Ahn, Byoung Sung; Park, Kun You
 CORPORATE SOURCE: Korea Institute of Science and Technology, CFC Alternatives Research Center, Seoul, S. Korea
 SOURCE: Hwahak Konghak (2000), 38(5), 585-590
 CODEN: HHKHAT; ISSN: 0304-128X
 PUBLISHER: Korean Institute of Chemical Engineers
 DOCUMENT TYPE: Journal
 LANGUAGE: Korean

AB Catalytic hydrogenolysis reaction of CFC-12 (CCl₂F₂) was investigated over Pd catalysts supported on the activated carbons which were pretreated with alkali-acid and/or acid-acid in series. The Pd/C catalysts were characterized by ICP, XRD, TEM, N₂ physisorption, and H₂ chemisorption. Minor metal components known as the side reaction catalyst in CFC-12 catalytic hydrogenolysis in the activated carbon were removed by consecutive treatment with NaOH-HCl and/or HCl-HF, HF-HCl. The pretreated Pd/C catalysts showed higher hydrogenolysis activity and selectivity to HFC-32 (CH₂F₂) than the corresponding untreated ones.

It was found that the dispersions of the pretreated catalysts were improved and the sintering phenomena were significantly restricted.

IT 7440-44-0, Carbon, uses

RL: CAT (Catalyst use); USES (Uses)
 (activated; catalytic hydrogenolysis of CFC-12 (CCl₂F₂) over Pd catalyst supported on activated carbon treated with alkali and acids)

IT 75-71-8, CFC-12

RL: RCT (Reactant); RACT (Reactant or reagent)
 (catalytic hydrogenolysis of CFC-12 (CCl₂F₂) over Pd catalyst supported on activated carbon treated with alkali and acids)

IT 75-10-5P, HFC-32

RL: SPN (Synthetic preparation); PREP (Preparation)
 (catalytic hydrogenolysis of CFC-12 (CCl₂F₂) over Pd catalyst supported on activated carbon treated with alkali and acids)

L29 ANSWER 6 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:330883 HCPLUS
 DOCUMENT NUMBER: 135:94225
 TITLE: Deactivation of palladium on activated carbon in the selective hydrogenolysis of CCl₂F₂ (CFC-12) into CH₂F₂ (HFC-32)
 AUTHOR(S): Wiersma, A.; van de Sandt, E. J. A. X.; Makkee, M.; Moulijn, J. A.
 CORPORATE SOURCE: Faculty of Applied Sciences, Section of Industrial Catalysis, Department of Chemical Process Technology, Delft University of Technology, Delft, 2628 BL, Neth.
 SOURCE: Applied Catalysis, A: General (2001), 212(1-2),

223-238

CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier Science B.V.DOCUMENT TYPE: Journal
LANGUAGE: English

AB The stability of the selected 1 weight% palladium on activated carbon catalyst in the selective hydrogenolysis of CCl_2F_2 into CH_2F_2 as function of temperature (510-540 K) and hydrogen to CCl_2F_2 feed ratio (1.5-20 mol/mol) has been studied. A satisfactorily stable catalyst performance for at least 1600 h of operation has been obtained at 510 K and H₂ to CCl_2F_2 feed ratios of 6 and 10. Outside this window, significant deactivation of the catalyst was observed. The conversion of CCl_2F_2 and the selectivity for CH_2F_2 were higher at increasing ratio H₂ to CCl_2F_2 ratio. These differences in catalyst performance became more pronounced as a function of time on stream. At higher temps. (520, 525, and 540 K) the catalyst deactivated independent of the H₂ to CCl_2F_2 feed ratio. Addition of methane or $CHClF_2$ to the feed led to addnl. deactivation of the catalyst, both at lower and higher temps. The observed phenomena of deactivation could be well explained by the formation of carbonaceous deposits on the catalyst surface. Neither sintering nor loss of palladium was found after reaction. On the contrary, the used catalysts had a higher palladium dispersion than the fresh catalyst. The degree of dispersing was dependent of the H₂ to CCl_2F_2 feed ratio and temperature. Poisoning is concluded to be not important. Based on these expts. the operating window of an industrial liquid-cooled multi-tubular CCl_2F_2 hydrogenolysis reactor is defined.

IT 7440-44-0, Carbon, processes

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);
PROC (Process); USES (Uses)
(deactivation of palladium on activated carbon in the selective hydrogenolysis of dichlorodifluoromethane into difluoromethane)

IT 75-71-8, CFC 12

RL: RCT (Reactant); RACT (Reactant or reagent)
(deactivation of palladium on activated carbon in the selective hydrogenolysis of dichlorodifluoromethane into difluoromethane)

IT 75-10-5P, HFC 32

RL: SPN (Synthetic preparation); PREP (Preparation)
(deactivation of palladium on activated carbon in the selective hydrogenolysis of dichlorodifluoromethane into difluoromethane)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:905514 HCAPLUS

DOCUMENT NUMBER: 134:75572

TITLE: Removal of halogen-containing compound gases from waste gases

INVENTOR(S): Ueda, Akio; Matsuoka, Nobuhiko; Ichimaru, Hiroshi; Nakano, Hisaji; Tainaka, Masahiro

PATENT ASSIGNEE(S): Central Glass Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND DATE

APPLICATION NO.

DATE

JP 2000354734	A2	20001226	JP 1999-167055	19990614
JP 3565742	B2	20040915		

PRIORITY APPLN. INFO.: JP 1999-167055 19990614
 AB The gases are removed by the following steps: (1) treating the waste gases with a solid agent of Si, B, W, Mo, V, or Ge containing catalysts and with oxide gases, e.g., O₂, O₃, N₂O, to form halide gases and (2) treating the halide gases. The catalysts may be Fe, Ni, Al, their oxides, and/or their fluorides. The solid agent may be heated at 100-1000°. The halogen-containing compound gases, e.g., C₅F₈, having low reactivity at normal temperature, are converted to halides, e.g., SiF₄, in the former step and then removed by the latter step by conventional method, e.g., alkali treatment, wet-scrubber treatment.

IT 75-10-5, Difluoromethane 75-71-8,
Dichlorodifluoromethane
 RL: POL (Pollutant); RCT (Reactant); REM (Removal or disposal);
 OCCU (Occurrence); PROC (Process); RACT (Reactant or reagent)
 (removal of halogen compound gases from waste gases by forming halide gases with catalyst-containing solid agents)

L29 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:362295 HCAPLUS
 DOCUMENT NUMBER: 133:152241
 TITLE: Selective hydrogenolysis of CCl₂F₂ into CH₂F₂ over palladium on activated carbon Kinetic mechanism and process design
 AUTHOR(S): Moulijn, J. A.; Makkee, M.; Wiersma, A.; van de Sandt, E. J. A. X.
 CORPORATE SOURCE: Section Industrial Catalysis, Department of Chemical Process Technology, Delft University of Technology, Delft, 2628 BL, Neth.
 SOURCE: Catalysis Today (2000), 59(3-4), 221-230
 CODEN: CATTEA; ISSN: 0920-5861
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB A process-development study is presented for conversion of CCl₂F₂ to CH₂F₂ by hydrogenolysis using Pd/C as catalyst. A kinetic scheme is elucidated and appears to be based on parallel kinetics; one route leads to either CHClF₂ or CH₂F₂ and the other to CH₄. The selectivity to CHClF₂ or CH₂F₂ depends on the amount of adsorbed Cl on the catalytic active surface. If excess H is present, the catalyst is sufficiently stable for a com. process. A conceptual process design is presented.

IT 75-10-5P, Difluoromethane
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
 (process design for selective hydrogenolysis of CCl₂F₂ to CH₂F₂ over Pd/C)

IT 75-71-8, Dichlorodifluoromethane
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (process design for selective hydrogenolysis of CCl₂F₂ to CH₂F₂ over Pd/C)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 9 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:109156 HCAPLUS
 DOCUMENT NUMBER: 132:213889
 TITLE: Electrochemical reduction of dichlorodifluoromethane

AUTHOR(S): at a Nafion solid polymer electrolyte cell
Fotiadis, T.; Kyriacou, G.; Lambrou, C.; Hadjispyrou, S.

CORPORATE SOURCE: Department of Chemical Engineering, Inorganic Chemistry Laboratory, Aristotle University of Thessaloniki, Thessaloniki, Greece

SOURCE: Journal of Electroanalytical Chemistry (2000), 480(1,2), 249-254

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The electrochem. reduction of dichlorodifluoromethane (CFC-12) at Ag, Pd, Cu and Au electrodes (which were deposited on Nafion 117 (H⁺ form) membranes, by reduction with NaBH₄ (10% weight/volume) solution) was studied. The products of

the reduction were CHClF₂, CH₂F₂, CH₃F and CH₄, as well as small amts. of dimers, CF₂:CF₂ and CHF₂CHF₂. The silver electrode gave the highest current efficiency (CE) and reduction rate. The rate of reduction at the silver

electrode was almost 10-160 times higher than that measured for the other electrodes, under the same conditions. Selectivity of CH₄ production increased for all metals with increasing neg. potential, except for CHClF₂ where it decreased. For the other products, a maximum in the selectivity-potential curve appeared. This fact led the authors to the conclusion that the reduction proceeds by the following mechanism: CCl₂F₂ → CHClF₂ → CH₂F₂ → CH₃F → CH₄. The rate of reduction of CFC-12 and the product distribution also depend on the pH of the solution, which is in contact with the membrane. The rate of reduction at the silver electrode was .apprx.4000 times higher at pH 14 than at pH 1. The cation of the supporting electrolyte was also important: the rate of reduction was lowered in the order K⁺ > Na⁺ > Li⁺, and this was attributed to the size of the cations, which influenced the structure of the double layer.

IT 75-71-8, Dichlorodifluoromethane

RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(electrochem. reduction at Ag, Pd, Cu and Au electrodes deposited on Nafion membranes)

IT 75-10-5, Difluoromethane

RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(formation in electrochem. reduction of dichlorodifluoromethane at Ag, Pd, and Cu electrodes deposited on Nafion membranes)

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 10 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:83709 HCPLUS

DOCUMENT NUMBER: 132:236693

TITLE: Hydrogenolysis of CFC-12 (CF₂Cl₂) over Pd/γ-Al₂O₃ pretreated with HCFC-22 (CHF₂Cl)

AUTHOR(S): Ahn, B. S.; Jeon, S. G.; Lee, H.; Park, K. Y.; Shul, Y. G.

CORPORATE SOURCE: Korea Institute of Science and Technology, CFC Alternative Research Center, Cheongryang, Seoul, S. Korea

SOURCE: Applied Catalysis, A: General (2000), 193(1,2), 87-93

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The hydrogenolysis of CF2Cl2 (CFC-12) has been studied in the gas phase over Pd (3 weight %)/ γ -Al2O3. Pretreatment of the catalyst with CHF2Cl (HCFC-22) was found to significantly improve the catalytic activity and the catalyst lifetime. The formation of Pd-carbide was observed in the CHF2Cl-treated catalyst, and the presence of the palladium carbide is thought to enhance the selectivity to the CH2F2 and to prevent sintering of palladium. XRD, TEM and XPS were used to characterize the structure and the composition of Pd/Al2O3.

IT 7784-18-1, Aluminum trifluoride
 RL: CAT (Catalyst use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
 (hydrogenolysis of CFC-12 over Pd/ γ -Al2O3 pretreated with HCFC-22)

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrogenolysis of CFC-12 over Pd/ γ -Al2O3 pretreated with HCFC-22)

IT 75-10-5P, HFC-32
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (hydrogenolysis of CFC-12 over Pd/ γ -Al2O3 pretreated with HCFC-22)

IT 1344-28-1, Alumina, uses
 RL: CAT (Catalyst use); USES (Uses)
 (γ -, catalyst support; hydrogenolysis of CFC-12 over Pd/ γ -Al2O3 pretreated with HCFC-22)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 11 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:781145 HCAPLUS

DOCUMENT NUMBER: 132:224060

TITLE: Development of a palladium on activated carbon for a conceptual process in the selective hydrogenolysis of CC12F2 (CFC-12) into CH2F2 (HFC-32)

AUTHOR(S): Makkee, M.; Wiersma, A.; van de Sandt, E. J. A. X.; van Bekkum, H.; Moulijn, J. A.

CORPORATE SOURCE: Section Industrial Catalysis, Delft University of Technology, Department of Chemical Process Technology, Delft, 2628 BL, Neth.

SOURCE: Catalysis Today (2000), 55(1-2), 125-137
 CODEN: CATTEA; ISSN: 0920-5861

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The hydrogenolysis of CC12F2 over 1 weight% palladium, platinum, rhodium, ruthenium, iridium, and rhenium on activated carbon has been studied in a micro-flow reactor, in a temperature range of 450-540 K, H2/CC12F2 feed ratios between 1.5 and 20, a pressure up to 0.4 MPa, and a WHSV between 0.5 and 2 g/(g h). The main products of the reaction for all investigated catalysts were CHClF2, CH2F2, and methane. Palladium on activated carbon shows the highest selectivity to CH2F2 (70-90%) at all conversion levels. The activity, selectivity to CH2F2, and stability of the palladium catalyst is a strong function of the hydrogen to CFC ratio and methane recycle ratio and the recycling of CHClF2 is not recommended. The catalyst proves to be stable over a period of 2000 h with simulated recycle streams and an optimum temperature for the catalyst performance was found at 510 K. On the basis of the exptl. data and a kinetic network a conceptual process design was made. In this design no hurdles have been encountered and this waste

technol. looks in economic prospective very promising.

IT 7440-44-0, Carbon, uses

RL: CAT (Catalyst use); USES (Uses)
(activated; HFC-32 production by catalytic
hydrogenolysis of CFC-12 over carbon-supported
catalyst)

IT 75-71-8, CFC-12

RL: RCT (Reactant); RACT (Reactant or reagent)
(catalytic hydrogenolysis to HFC-32 over
carbon-supported catalyst)

IT 75-10-5P, HFC-32

RL: IMF (Industrial manufacture); PREP (Preparation)
(production by catalytic hydrogenolysis of CFC-12 over
carbon-supported catalyst)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:730692 HCAPLUS

DOCUMENT NUMBER: 132:238652

TITLE: Catalyst deactivation in the selective hydrogenolysis
of CCl₂F₂ into CH₂F₂

AUTHOR(S): Wiersma, Andre; Van de Sandt, Emile J. A. X.; Makkee,
Michiel; Moulijn, Jacob A.

CORPORATE SOURCE: Section Industrial Catalysis, Delft University of
Technology, Delft, 2628 BL, Neth.

SOURCE: Studies in Surface Science and Catalysis (1999),
126(Catalyst Deactivation 1999), 349-356

CODEN: SSCTDM; ISSN: 0167-2991

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The stability of 1 wt%Pd/C catalyst for selective hydrogenolysis of CCl₂F₂
to CH₂F₂ was studied as a function of temperature (510-540K) and H/CCl₂F₂ feed
ratio (1.5-20 mol/mol). A stable catalyst performance for \geq 1600 h
of operation was attained at 510K and H/CCl₂F₂ feed ratio 6-10. At lower
ratio (1.5-3), continuous deactivation of the catalyst was observed. At
H/CCl₂F₂ ratio >20, catalyst deactivation also occurred. Both the
conversion of CCl₂F₂ and the selectivity to CH₂F₂ were higher with
increasing H/CCl₂F₂ ratio. The differences in catalyst performance became
more pronounced as a function of time on stream. The observed phenomena of
deactivation is explained by the formation of carbonaceous deposits on the
catalyst surface. Neither sintering nor Pd loss play a role in
deactivation. On the contrary, the used catalysts have higher Pd
dispersion than the fresh catalyst.

IT 75-10-5P

RL: IMF (Industrial manufacture); PREP (Preparation)
(catalyst deactivation in selective hydrogenolysis of CCl₂F₂ to CH₂F₂
over Pd/C catalysts)

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
(catalyst deactivation in selective hydrogenolysis of CCl₂F₂
to CH₂F₂ over Pd/C catalysts)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:602280 HCAPLUS

DOCUMENT NUMBER: 131:206018

TITLE: Electrochemical reduction of dichlorodifluoromethane

AUTHOR(S): in acetonitrile medium to useful fluorinated compounds
Schizodimou, A.; Kyriacou, G.; Lambrou, Ch.
CORPORATE SOURCE: Department of Chemical Engineering, Aristotle
University of Thessaloniki, Thessaloniki, 54006,
Greece
SOURCE: Journal of Electroanalytical Chemistry (1999), 471(1),
26-31
CODEN: JECHE8; ISSN: 0368-1874
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The electrochem. reduction of dichlorodifluoromethane (CFC-12) at Ag, Cu, Au, Pt and Ni electrodes in acetonitrile and 0.1M Bu4NBr as supporting electrolyte was studied. The main gaseous products are CF2CF2, CH2F2 and CH3F. Small amts. of CHClF2 and CH4 were also detected. Among the main products, CF2CF2 and CH2F2 are of great practical importance, because the 1st is the monomer for the production of Teflon and the 2nd is an excellent candidate for low temperature refrigeration applications, which in addition does not cause depletion of ozone. Silver is the most efficient electrode for the reduction of CFC-12, because the rate of the reduction was greater than at the other metals and the current efficiencies for CF2CF2 (38%) and CH2F2 (44%) were also high. Among the other electrodes, Pt gave also high current efficiencies but the reduction rate was much lower. The increase of the neg. potential at the Ag electrode leads to a significant increase in the rate of the electrochem. reduction. The electroredn. of CFC-12 was also studied in mixed acetonitrile + water solns. The exptl. results indicated an almost linear decrease of the reduction rate with the increase of the water content. This was attributed to the decreased solubility of CFC-12 in water. The formation rate of CF2CF2 was also significantly decreased.

IT 7440-02-0, Nickel, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(cathode for electrochem. reduction of dichlorodifluoromethane in acetonitrile medium)

IT 75-71-8, Dichlorodifluoromethane
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrochem. reduction of dichlorodifluoromethane in acetonitrile and aqueous acetonitrile to useful fluorinated compds.)

IT 75-10-5P, Difluoromethane
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
(preparation in electrochem. reduction of dichlorodifluoromethane in acetonitrile medium)

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 14 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:339904 HCPLUS
DOCUMENT NUMBER: 131:201498
TITLE: Conversion of CC12F2 (CFC-12) in
the presence and absence of H2 on sol-gel derived
Pd/Al2O3 catalysts
AUTHOR(S): Ocal, Meltem; Maciejewski, Marek; Baiker, Alfons
CORPORATE SOURCE: ETH-Zentrum, Laboratory of Technical Chemistry, Swiss
Federal Institute of Technology, Zurich, CH-8092,
Switz.
SOURCE: Applied Catalysis, B: Environmental (1999), 21(4),
279-289
CODEN: ACBEE3; ISSN: 0926-3373

PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Conversion of CCl_2F_2 in the presence (hydrogenolysis) and absence of hydrogen on Al_2O_3 , AlF_3 and $\text{Pd}/\text{Al}_2\text{O}_3$ xerogel and aerogel catalysts showed formation of CClF_3 and CCl_3F on Al_2O_3 and AlF_3 in the presence and absence of hydrogen as well as on the $\text{Pd}/\text{Al}_2\text{O}_3$ catalysts in the absence of hydrogen. Overall activity increased during the hydrogenolysis reactions at 230° as a function of time which was paralleled by a significant increase in the yield of CClF_3 formed through a Cl/F-exchange reaction. X-ray diffraction patterns of the spent catalyst recovered after 3 h hydrogenolysis confirmed the presence of $\text{Pd}(\text{C})$ (Pd-carbon solid solution), and AlF_3 phases on $\text{Pd}/\text{Al}_2\text{O}_3$ catalysts indicated that the carbon incorporation into the Pd lattice and the transformation of Al_2O_3 to AlF_3 starts at the initial stage of the reaction. It was concluded that AlF_3 is responsible for the Cl/F-exchange reactions. CH_4 , a complete hydrogenation product, is formed during hydrogenolysis. Another route for its formation is the reaction between hydrogen in the gas phase and the interstitial carbon.

IT 75-71-8, CFC 12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (conversion of CCl_2F_2 in the presence and absence of H_2 on sol-gel derived $\text{Pd}/\text{Al}_2\text{O}_3$ catalysts)

IT 75-10-5P, Difluoromethane
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of; conversion of CCl_2F_2 in the presence and absence of H_2 on sol-gel derived $\text{Pd}/\text{Al}_2\text{O}_3$ catalysts)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 15 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1998:708038 HCPLUS
 DOCUMENT NUMBER: 130:83159
 TITLE: Selection of activated carbon for the selective hydrogenolysis of CCl_2F_2 (CFC-12) into CH_2F_2 (HFC-32) over palladium-supported catalysts
 AUTHOR(S): van de Sandt, Emile J. A. X.; Wiersma, Andre; Makkee, Michiel; van Bekkum, Herman; Moulijn, Jacob A.
 CORPORATE SOURCE: Department of Organic Chemistry and Catalysis, Delft University of Technology, Delft, 2628 BL, Neth.
 SOURCE: Applied Catalysis, A: General (1998), 173(2), 161-173
 CODEN: ACAGE4; ISSN: 0926-860X
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Activated carbon was selected as support for Pd catalysts in the hydrogenolysis of CCl_2F_2 into CH_2F_2 because of its inertness to acid byproducts of the reaction. Various types of activated carbon were investigated. The catalysts have a selectivity of 65-85 mol% to CH_2F_2 at all conversion levels.

IT 75-10-5P, HFC-32
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (effect of activated C properties on selective hydrogenolysis of CCl_2F_2 to CH_2F_2 over Pd/C catalysts)

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (effect of activated C properties on selective hydrogenolysis of CCl_2F_2 to CH_2F_2 over Pd/C catalysts)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 16 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1998:562991 HCAPLUS
 DOCUMENT NUMBER: 129:218213
 TITLE: Study of CrF₃/AlF₃ catalyst for synthesizing HFC-134a as a substitute for CFC-12
 . VI. Multifunctional catalyst for synthesis of fluorohydrocarbons
 AUTHOR(S): Lu, Jian; Shi, Lei; Wang, Zhenyu; Li, Huili; Peng, Shaoyi
 CORPORATE SOURCE: Xi'an Modern Chem. Inst., Xi'an, 710065, Peop. Rep. China
 SOURCE: Cuihua Xuebao (1998), 19(4), 375-377
 CODEN: THHPD3; ISSN: 0253-9837
 PUBLISHER: Kexue Chubanshe
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese
 AB γ -AlF₃-supported Cr³⁺ with other minor components (Co²⁺ and Mg²⁺) catalyst exhibits higher activity, selectivity, and stability for synthesis of HFC-134a, HFC-32, HCFC-123, HFC-152a and C₆H₅CF₃ by gas-phase fluorination, and is an excellent catalyst for F/Cl exchange reactions. The order of the activity of the catalyst for F/Cl exchange reactions is as follows: HClCCH₂.apprx.C₂CCHCl₂>CH₂Cl₂.apprx.C₆H₅CCl₃>CCl₂CCl₂>CF₃CH₂Cl.
 IT 7784-18-1, Aluminum fluoride
 RL: CAT (Catalyst use); USES (Uses)
 (CrF₃/AlF₃ multifunctional catalyst for synthesis fluorohydrocarbons as substitutes for CFC-12 by fluorination)
 IT 75-10-5P, HFC-32
 RL: MOA (Modifier or additive use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (CrF₃/AlF₃ multifunctional catalyst for synthesis fluorohydrocarbons as substitutes for CFC-12 by fluorination)

L29 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1998:533789 HCAPLUS
 DOCUMENT NUMBER: 129:303936
 TITLE: Development of a satisfactory palladium on activated carbon catalyst for the selective hydrogenolysis of CCl₂F₂ (CFC-12) into CH₂F₂ (HFC-32)
 AUTHOR(S): Makkee, M.; van de Sandt, E. J. A. X.; Wiersma, A.; Moulijn, J. A.
 CORPORATE SOURCE: Section Industrial Catalysis, Department of Chemical Process Technology, Delft University of Technology, Delft, 2628 BL, Neth.
 SOURCE: Journal of Molecular Catalysis A: Chemical (1998), 134(1-3), 191-200
 CODEN: JMCCF2; ISSN: 1381-1169
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A Pd on activated C catalyst was developed for the selective hydrogenolysis of waste CCl₂F₂ (CFC-12) to the high value product, CH₂F₂ (HFC-32). The activity, selectivity to CH₂F₂, and stability of the catalyst is a strong function of the H/CFC ratio.

IT 75-10-5P, HFC-32
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (Pd/C catalyst for selective hydrogenolysis of waste
 CFC-12 to HFC-32)

IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (Pd/C catalyst for selective hydrogenolysis of waste
 CFC-12 to HFC-32)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 18 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:463288 HCPLUS

DOCUMENT NUMBER: 129:110399

TITLE: Comparison of the performance of activated carbon-supported noble metal catalysts in the hydrogenolysis of CCl₂F₂

AUTHOR(S): Wiersma, Andre; Van De Sandt, Emile J. A. X.; Den Hollander, Marion A.; Van Bekkum, Herman; Makkee, Michiel; Moulijn, Jacob A.

CORPORATE SOURCE: Industrial Catalysis Section, Department of Chemical Process Technology, Delft, 2628 BL, Neth.

SOURCE: Journal of Catalysis (1998), 177(1), 29-39
 CODEN: JCTLA5; ISSN: 0021-9517

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The hydrogenolysis of CCl₂F₂ over Pd, Pt, Rh, Ru, Ir and Re on activated C was studied in a micro-flow reactor at 450-540K, H₂/CCl₂F₂ feed ratio 1.5-6, 0.4 MPa and WHSV 1 g/g.h. The main products of the reaction for all investigated catalysts were CHClF₂, CH₂F₂, and CH₄. According to their performance, the catalysts were divided into 4 groups: Re showing no conversion, Pd with high selectivity for CH₂F₂, Ir and Ru with high selectivity for CHClF₂, and Pt and Rh with moderate selectivity for CHClF₂ and CH₂F₂. The adsorption of Cl on the metal surface plays an important role in the selectivity. Strong Cl adsorption leads to a higher selectivity for CHClF₂. These results are consistent with a reaction mechanism in which difluorocarbene is the key intermediate. Apparently, the same kinetic network applies to all metals studied. The performance of the catalysts changed as a function of time on stream. Pd, Rh, and especially Ru deactivated during the reaction, whereas the activity of Ir and

pt increased.

IT 75-71-8, Dichlorodifluoromethane

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (activity and selectivity of activated carbon-supported noble metal catalysts in hydrogenolysis of CCl₂F₂)

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); PREP (Preparation)
 (activity and selectivity of activated carbon-supported noble metal catalysts in hydrogenolysis of CCl₂F₂ to)

REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 19 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:3020 HCPLUS

DOCUMENT NUMBER: 128:26432

TITLE: Electrochemical Decomposition of CFC-12 using Gas Diffusion Electrodes

AUTHOR(S): Sonoyama, Noriyuki; Sakata, Tadayoshi
CORPORATE SOURCE: Department of Electronic Chemistry Interdisciplinary
Graduate School of Science and Engineering, Tokyo
Institute of Technology, Yokohama, 226, Japan
SOURCE: Environmental Science and Technology (1998), 32(3),
375-378
CODEN: ESTHAG; ISSN: 0013-936X
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Chlorofluorocarbons (CFCs) were known to cause the depletion of the ozone layer at the stratosphere. A large amount of CFCs is still in use as a refrigerant or still present in the plastic forms. These CFCs should be collected and retreated to harmless compds. to the environment. Electrochem. decomposition of dichlorodifluoromethane (CFC-12) was carried out using 12 kinds of metal supported gas diffusion electrodes (GDEs). Ag-, Cu-, In-, and Pb-supported GDEs showed high electrocatalytic activity of decomposition of CFC-12. Especially Cu-, In-, and Pb-supported GDEs showed almost 100% efficiency without producing the byproduct (H₂). Zn-, Ag-, Cu-, and In-supported GDEs caused defluorination of CFC-12 as well as dechlorination and produced methane mainly. Pb-supported GDE induced only dechlorination of CFC-12 and produced difluoromethane (HFC-32) in high selectivity (92.6%). With the increase in the c.d., the partial c.d. of methane formation at Cu-supported GDE was saturated at 370 mA cm⁻². The partial c.d. of HFC-32 formation at Pb-supported GDE was not saturated even at 650 mA cm⁻² and kept high selectivity of HFC-32 formation.
IT 75-71-8, CFC 12
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent) (CFC-12; electrochem. decomposition of CFC-12 using gas diffusion electrodes)
IT 75-10-5, Difluoromethane
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative) (HFC-32; electrochem. decomposition of CFC-12 using gas diffusion electrodes)
IT 7440-02-0, Nickel, uses
RL: CAT (Catalyst use); USES (Uses) (electrochem. decomposition of CFC-12 using gas diffusion electrodes)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 20 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:360426 HCPLUS
DOCUMENT NUMBER: 127:96785
TITLE: Palladium black as model catalyst in the hydrogenolysis of CCl₂F₂ (CFC-12) into CH₂F₂ (HFC-32)
AUTHOR(S): van de Sandt, E. J. A. X.; Wiersma, A.; Makkee, M.; van Bekkum, H.; Moulijn, J. A.
CORPORATE SOURCE: Department of Organic Chemistry and Catalysis, Delft University of Technology, Julianalaan 136, BL Delft, 2628, Neth.
SOURCE: Applied Catalysis, A: General (1997), 155(1), 59-73
CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Palladium black is applied as a model catalyst for the hydrogenolysis of CCl_2F_2 into CH_2F_2 over carbon-supported palladium. The performance of palladium black is comparable with that of palladium on activated carbon. Fresh and used samples are characterized with x-ray diffraction (XRD), temperature programmed reduction (TPR), and temperature programmed oxidation (TPO) in a differential scanning calorimeter (DSC). Under reaction conditions, at temps. as low as 423K, palladium is converted into palladium carbide ($\text{PdC}_{0.15}$), indicating that the amount of carbon on the catalytic surface is negligible. Fluorine present has no catalytic effect. Methane treatment (>523K) and ethene treatment (>448K) also lead to the formation of palladium carbide. In those cases carbon is deposited on the surface of the palladium. The amount of hydrogen in fresh palladium, determined by measuring the temperature of decomposition of palladium hydride at different partial

pressures of hydrogen and by measuring the heat of decomposition in DSC, is as $\text{PdH}_{0.6}$. This amount is in agreement with the value as obtained by TPR and as reported in literature.

IT 7440-44-0, Carbon, uses

RL: CAT (Catalyst use); USES (Uses)
(activated, catalyst support; performance and characterization of palladium black model catalyst in hydrogenolysis of CFC 12 into HFC 32)

IT 75-10-5P, HFC 32

RL: IMF (Industrial manufacture); PREP (Preparation)
(performance and characterization of palladium black model catalyst in hydrogenolysis of CFC 12 into HFC 32)

IT 75-71-8, CFC 12

RL: RCT (Reactant); RACT (Reactant or reagent)
(performance and characterization of palladium black model catalyst in hydrogenolysis of CFC 12 into HFC 32)

REFERENCE COUNT:

39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 21 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:35573 HCAPLUS

DOCUMENT NUMBER: 126:76464

TITLE: Mechanistic study of the selective hydrogenolysis of CCl_2F_2 (CFC-12) to CH_2F_2 (HCF-32) over palladium on activated carbon

AUTHOR(S): van de Sandt, Emile J. A. X.; Wiersma, Andre; Makkee, Michiel; van Bekkum, Hermann; Moulijn, Jacob A.

CORPORATE SOURCE: Dep. Org. Chem. Catalysis, Delft Univ. Technol., Delft, 2628, Neth.

SOURCE: Recueil des Travaux Chimiques des Pays-Bas (1996), 115(11/12), 505-510

CODEN: RTCPA3; ISSN: 0165-0513

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The influence of temperature (400-560K), $\text{H}_2/\text{CCl}_2\text{F}_2$ ratio (2.2-20), and weight hourly space velocity (0.3-1.0 g/g.h) on the hydrogenolysis of CCl_2F_2 to CH_2F_2 over Pd/C was investigated. The catalyst shows a remarkably high selectivity to CH_2F_2 (70-90 mol%) at all conversion levels in a broad range of process conditions. A mechanism is proposed in which the reaction proceeds mainly via parallel reaction pathways. The postulated mechanism is supported by thermodn. data.

IT 75-71-8, Dichlorodifluoromethane
 RL: PEP (Physical, engineering or chemical process); RCT
 (Reactant); PROC (Process); RACT (Reactant or reagent)
 (mechanism of selective hydrogenolysis of CCl_2F_2 to CH_2F_2 over Pd/C
 catalyst)
 IT 75-10-5P, Difluoromethane
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (mechanism of selective hydrogenolysis of CCl_2F_2 to CH_2F_2 over Pd/C
 catalyst)
 REFERENCE COUNT: 57 THERE ARE 57 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 22 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1996:611391 HCPLUS
 DOCUMENT NUMBER: 125:279125
 TITLE: Process development for the selective hydrogenolysis
 of CCl_2F_2 (CFC-12) into CH_2F_2 (HFC-
 32)
 AUTHOR(S): Wiersma, A.; Van de Sandt, E. J. A. X.; Makkee, M.;
 Van Bekkum, H.; Moulijn, J. A.
 CORPORATE SOURCE: Department Chemical Process Technology, Delft
 University Technology, Delft, 2628 BL, Neth.
 SOURCE: Studies in Surface Science and Catalysis (1996),
 101(Pt. A, 11th International Congress on
 Catalysis--40th Anniversary, 1996, Pt. A), 369-378
 CODEN: SSCTDM; ISSN: 0167-2991
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Pd on activated carbon is an efficient and stable catalyst for
 hydrogenolysis of CCl_2F_2 to CH_2F_2 . The performance and stability of the
 catalyst strongly depend on the H₂ to CCl_2F_2 feed ratio. At low feed
 ratios coke deposition causes deactivation, but at high ratios sintering
 of Pd causes deactivation. The reaction follows parallel pathways. An
 ideal process for the hydrogenolysis includes a multi-tube fixed bed
 reactor with hydrogen recycle in which a limited amount of methane is
 allowed.
 IT 75-71-8, Dichlorodifluoromethane
 RL: PEP (Physical, engineering or chemical process); RCT
 (Reactant); PROC (Process); RACT (Reactant or reagent)
 (process development for selective hydrogenolysis of CCl_2F_2 to CH_2F_2 in
 presence of palladium catalyst)
 IT 75-10-5P, Difluoromethane
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (process development for selective hydrogenolysis of CCl_2F_2 to CH_2F_2 in
 presence of palladium catalyst)

L29 ANSWER 23 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1996:476634 HCPLUS
 DOCUMENT NUMBER: 125:114156
 TITLE: Preparation of difluoromethane by reductive
 dechlorination
 INVENTOR(S): Wiersma, Andre; van de Sandt, Emilius Johannes
 Albertus Xaverius; van Bekkum, Herman; Makkee,
 Michiel; Moulijn, Jacob Adriaan
 PATENT ASSIGNEE(S): Technische Universiteit Delft, Neth.
 SOURCE: Neth. Appl., 12 pp.
 CODEN: NAXXAN
 DOCUMENT TYPE: Patent
 LANGUAGE: Dutch

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
NL 9401574	A	19960501	NL 1994-1574	19940927
PRIORITY APPLN. INFO.:			NL 1994-1574	19940927
OTHER SOURCE(S): CASREACT 125:114156				
AB CH ₂ F ₂ was prepared by dehalogenation of CCl ₂ F ₂ or CHClF ₂ over a Pd-C catalyst containing 0.1-4.0% Pd on C with an ash content of 0.5-6%. Thus, CCl ₂ F ₂ and H in 3:1 ratio were passed over a com. catalyst containing 0.5% pd on C with an ash content of 3.0% at 500 K to give CH ₂ F ₂ with a selectivity of 87% at a conversion rate of 28%.				
IT	75-10-5P, Difluoromethane			
	RL: IMF (Industrial manufacture); PREP (Preparation) (preparation of difluoromethane by reductive dechlorination over Pd catalyst)			
IT	75-71-8, Dichlorodifluoromethane			
	RL: RCT (Reactant); RACT (Reactant or reagent) (preparation of difluoromethane by reductive dechlorination over Pd catalyst)			

L29 ANSWER 24 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:119245 HCPLUS
 DOCUMENT NUMBER: 124:180109
 TITLE: Process for the selective hydrogenolysis of CCl₂F₂ (CFC-12) into CH₂F₂ (HFC-32)
 AUTHOR(S): Wiersma, A.; van de Sandt, E. J. A. X.; Makkee, M.; Luteijn, C. P.; van Bekkum, H.; Moulijn, J. A.
 CORPORATE SOURCE: Section Industrial Catalysis, Department of Chemical Process Technology, Delft University of Technology, Julianalaan 136, BL Delft, 2628, Neth.
 SOURCE: Catalysis Today (1996), 27(1-2), 257-64
 CODEN: CATTEA; ISSN: 0920-5861
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The conversion of waste CCl₂F₂ (CFC-12) into high added value product CH₂F₂ (HFC-32) seems tech. and economically feasible with a selected palladium on activated carbon catalyst. This catalyst shows a remarkable constant selectivity to HFC-32 in the range between 70% and 90% at all conversion levels with varying process conditions. Small amount of impurities, like Al, Fe or Cr, present in the activated carbon can have a significant effect on the catalyst performance. These impurities act as Friedel-Crafts catalyst thus catalyzing the unwanted chlorine-fluorine exchange. The chlorine-fluorine exchange can be sufficiently suppressed by removing the impurities from the activated carbon support prior to introduction of the palladium. The mechanism of the reaction follows mainly parallel rather than the expected serial pathways. A reaction scheme is proposed, which explains the high selectivity to HFC-32 by formation of a CF₂-carbene, which preferentially desorbs as HFC-32.
 IT 7440-44-0, Activated carbon, uses
 RL: CAT (Catalyst use); USES (Uses)
 (activated; selective hydrogenolysis of CFC 12 into HFC 32 by using palladium on activated carbon catalyst)
 IT 75-71-8, CFC-12
 RL: RCT (Reactant); RACT (Reactant or reagent)

(selective hydrogenolysis of CFC 12 into
HFC 32 by using palladium on activated carbon
catalyst)

IT 75-10-5P, HFC-32

RL: SPN (Synthetic preparation); PREP (Preparation)
(selective hydrogenolysis of CFC 12 into
HFC 32 by using palladium on activated carbon
catalyst)

L29 ANSWER 25 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:994879 HCAPLUS

DOCUMENT NUMBER: 124:86351

TITLE: Process for converting chlorodifluoromethane and
dichlorodifluoromethane

INVENTOR(S): Manogue, William H.; Noelke, Charles J.; Swearingen,
Steven H.

PATENT ASSIGNEE(S): du Pont de Nemours, E. I., and Co., USA

SOURCE: PCT Int. Appl., 24 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9524369	A1	19950914	WO 1995-US1518	19950216
W: AM, AU, BB, BG, BR, BY, CA, CN, CZ, EE, FI, GE, HU, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SI, SK, TJ, TT, UA, US, UZ, VN				
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9519122	A1	19950925	AU 1995-19122	19950216
US 5516947	A	19960514	US 1995-427637	19950421
PRIORITY APPLN. INFO.:			US 1994-212073	A 19940311
			WO 1995-US1518	W 19950216

AB A process is disclosed for the conversion of halogenated methanes of the formula: CClyH_{2-y}F₂ (wherein y is 1 or 2) to a mixture of conversion products. The process involves reacting certain halogenated hydrocarbon feeds and hydrogen (wherein said halogenated methanes are at least one mole percent of the halogenated hydrocarbon feed) in a reaction vessel of alumina, silicon carbide or at least one metal selected from gold, chromium, aluminum, molybdenum, titanium, nickel, iron, cobalt, and their alloys at a temperature of from about 500°C to 800°C and a pressure from about 101 kPa to 7000 kPa to produce a mixture of conversion products of said halogenated methanes which comprises at least 5 mol percent C₂H₂F₄, wherein the mole ratio of CH₂FCF₃ to CHF₂CHF₂ in said C₂H₂F₄ is at least about 1:9.

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(process for converting chlorodifluoromethane and
dichlorodifluoromethane)

IT 1344-28-1, Alumina, uses 7429-90-5, Aluminum,
uses 7440-02-0, Nickel, uses

RL: NUU (Other use, unclassified); USES (Uses)

(process for converting chlorodifluoromethane and
dichlorodifluoromethane)

IT 75-71-8, CFC-12

RL: RCT (Reactant); RACT (Reactant or reagent)
(process for converting chlorodifluoromethane and
dichlorodifluoromethane)

L29 ANSWER 26 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1995:675633 HCPLUS
DOCUMENT NUMBER: 123:338750
TITLE: Selective hydrogenation of CFC-12
to HFC-32 on Zr-Pd/C
catalyst
AUTHOR(S): Ohnishi, R.; Wang, W. -L.; Ichikawa, M.
CORPORATE SOURCE: Catalysis Research Center, Hokkaido University,
Sapporo, 060, Japan
SOURCE: Studies in Surface Science and Catalysis (1994),
90(Acid-Base Catalysis II), 101-4
CODEN: SSCTDM; ISSN: 0167-2991
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 123:338750

AB A symposium. Reaction of dichlorodifluoromethane (CFC-12) and chlorodifluoromethane (HCFC-22) with H₂ was carried out on modified Pd catalysts. On 5wt% Pd/C, hydrogenation of CFC-12 gave mainly difluoromethane (HFC-32) at 200°C and methane at 350°C, resp. Zr and V modifiers promoted to increase in activity with no change in selectivity and, thus, to enhance the yield of HFC-32. From temperature programmed reduction (TPR) measurements, formation of Pd-Zr hydride, which desorbed hydrogen at ca. 200°C, was observed. This hydride may play a role to supply active hydrogen in the reaction at the reaction temperature

IT 75-10-5P, Difluoromethane

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(selective hydrogenation of CFC-12 to HFC-32 on Zr-Pd/C catalyst)

IT 75-71-8, CFC-12

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(selective hydrogenation of CFC-12 to HFC-32 on Zr-Pd/C catalyst)

L29 ANSWER 27 OF 32 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:667043 HCPLUS
DOCUMENT NUMBER: 123:35762
TITLE: Effect of the Metal-Support Interaction on the Catalytic Properties of Palladium for the Conversion of Difluorodichloromethane with Hydrogen: Comparison of Oxides and Fluorides as Supports
AUTHOR(S): Coq, Bernard; Figueras, Francois; Hub, Serge; Tournigant, Didier
CORPORATE SOURCE: Laboratoire de Materiaux Catalytiques et Catalyse en Chimie Organique, ENSCM, Montpellier, 34053, Fr.
SOURCE: Journal of Physical Chemistry (1995), 99(28), 11159-66
CODEN: JPCHAX; ISSN: 0022-3654
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The reaction of CF₂Cl₂ with hydrogen has been studied between 433 and 523 K and atmospheric pressure, over Pd catalysts supported on graphite and oxides or

fluorides of Al, Ti, and Zr. In CF_2Cl_2 hydrogenation, CH_2F_2 and CH_4 represented >95% of the products. The catalytic properties of fluoride supported catalysts did not undergo any change as a function of time. In contrast, Pd supported on oxides showed changes in selectivity during the first hours on stream. This was ascribed to the reaction of the oxide support with HF released during the reaction. Alumina and titania were nearly completely converted to the corresponding fluorides, but not zirconia. The selectivity to the desired product CH_2F_2 was 56% for Pd/graphite and reached 90% for Pd/ZrF₄. The kinetic study suggested that the selectivity was controlled by the bond strength between a carbene-like species CF_2 and the surface. The strength of this interaction is supposed to vary with electron availability at the Pd surface, and this hypothesis was then investigated by IR spectroscopy using the adsorption of CO on Pd/Al₂O₃ and Pd/AlF₃. The morphol. of the Pd particles was little affected by the support and that AlF₃-supported Pd becomes electron deficient, due to the strong Lewis acidity of the support. This effect is mainly a short-range effect which is better induced by supports made up of a mixture of fluorides, oxyfluorides, and hydroxyfluorides, rather than pure fluorides. Catalytic properties similar to those of Pd/AlF₃ and ZrF₄ can be simulated with Pd/graphite samples promoted with small amts. of aluminum or zirconium.

- IT 13963-57-0, Aluminum acetylacetone
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst precursor; metal-support interaction in
 difluorodichloromethane hydrogenation catalyzed by oxide or
 fluoride-supported palladium)
- IT 1344-28-1, Aluminum oxide, uses 7784-18-1,
 Aluminum trifluoride 13463-67-7, Titanium oxide, uses
 RL: CAT (Catalyst use); PRP (Properties); USES (Uses)
 (catalyst support; metal-support interaction in
 difluorodichloromethane hydrogenation catalyzed by oxide or
 fluoride-supported palladium)
- IT 75-10-5P, Difluoromethane
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (metal-support interaction in difluorodichloromethane hydrogenation
 catalyzed by oxide or fluoride-supported palladium)
- IT 75-71-8, Difluorodichloromethane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (metal-support interaction in difluorodichloromethane
 hydrogenation catalyzed by oxide or fluoride-supported palladium)

L29 ANSWER 28 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1994:533527 HCAPLUS
 DOCUMENT NUMBER: 121:133527
 TITLE: Process for producing difluoromethane
 INVENTOR(S): Ichikawa, Masaru; Ohnishi, Ryuichirou
 PATENT ASSIGNEE(S): Daikin, Industries, Ltd., Japan
 SOURCE: PCT Int. Appl., 14 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9411328	A1	19940526	WO 1993-JP1622	19931109
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 669304	A1	19950830	EP 1993-924196	19931109

EP 669304	B1	19980429		
R: DE, FR, GB, IT				
JP 3203655	B2	20010827	JP 1994-511920	19931109
US 6700026	B1	20040302	US 1996-751557	19961118
PRIORITY APPLN. INFO.:			JP 1992-326103	A 19921111
			WO 1993-JP1622	W 19931109
			US 1995-433458	B1 19950608

OTHER SOURCE(S): CASREACT 121:133527

AB This patent application describes a process for producing difluoromethane (I) with high conversion and selectivity by the reaction of dichlorodifluoromethane (II) and/or monochlorodifluoromethane with hydrogen in the presence of a palladium-containing catalyst. Hydrogenation of II over a catalyst containing Pd and Zr on carbon under hydrogen at 250° gave I with 91% conversion of II, 81% selectivity for I, and 14% selectivity for methane.

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrogenation of)

IT 75-10-5P, Difluoromethane

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, method for)

L29 ANSWER 29 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1994:298054 HCAPLUS

DOCUMENT NUMBER: 120:298054

TITLE: Preparation of hydrogen-containing fluoromethanes

INVENTOR(S): Yoshitake, Masaru; Tatematsu, Shin; Morikawa, Shinsuke

PATENT ASSIGNEE(S): Asahi Glass Co Ltd, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06001731	A2	19940111	JP 1992-183134	19920617
PRIORITY APPLN. INFO.:			JP 1992-183134	19920617

OTHER SOURCE(S): CASREACT 120:298054

AB The title compds. are prepared by H reduction of CCl₂F₂ in gas phases in presence of reduction catalysts and ≥1 compds. chosen from H-containing chlorofluorocarbons and H-containing fluorocarbons. CCl₂F₂, CHF₂CH₃, and H were passed through Pt/activated C at 250° with 60 s contact time to give CHClF₂ and CH₂F₂ with 51% and 20% selectivity, resp., at .apprx.80% conversion.

IT 75-10-5P, Difluoromethane

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, by reduction of dichlorodifluoromethane)

IT 75-71-8, Dichlorodifluoromethane

RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction of, hydrogen-containing fluoromethanes from)

L29 ANSWER 30 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1994:216700 HCAPLUS

DOCUMENT NUMBER: 120:216700

TITLE: Preparation of hydrogen-containing fluoromethanes

INVENTOR(S): Yoshitake, Masaru; Tatematsu, Shin; Morikawa, Shinsuke

PATENT ASSIGNEE(S): Asahi Glass Co Ltd, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05339182	A2	19931221	JP 1992-179322	19920612
PRIORITY APPLN. INFO.:			JP 1992-179322	19920612
OTHER SOURCE(S):	CASREACT 120:216700			
AB	H-containing fluoromethanes are prepared by H reduction of CCl ₂ F ₂ in presence of			
	reduction catalysts comprising ≥ 1 main elements chosen from Group 8-10 elements and ≥ 1 addnl. elements chosen from Group 11 elements.			
	PdCl ₂ and HAuCl ₄ were supported on C at 1.8 and 0.2 weight%, resp., reduced by hydrazine, and dried to prepare a catalyst. CCl ₂ F ₂ was treated with H in presence of the catalyst at 250 ° for 60 s to give CHClF ₂ and CH ₂ F ₂ with 23 and 61% selectivity, resp., at .apprx.80% conversion.			
IT	75-10-5P, Difluoromethane			
	RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of, by reduction of dichlorodifluoromethane)			
IT	75-71-8, Dichlorodifluoromethane			
	RL: RCT (Reactant); RACT (Reactant or reagent) (reduction of, fluoromethanes from, catalysts for)			

L29 ANSWER 31 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1993:494820 HCAPLUS
 DOCUMENT NUMBER: 119:94820
 TITLE: Conversion under hydrogen of
 dichlorodifluoromethane over supported
 palladium catalysts
 AUTHOR(S): Coq, Bernard; Cognion, Jean Marie; Figueras, Francois;
 Tournigant, Didier
 CORPORATE SOURCE: Lab. Chim. Org. Phys. Cinet. Chim. Appl., ENCSM,
 Montpellier, 34053, Fr.
 SOURCE: Journal of Catalysis (1993), 141(1), 21-33
 CODEN: JCTLA5; ISSN: 0021-9517
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The conversion of difluorodichloromethane has been studied in the gas phase between 433 and 523 K at atmospheric pressure over Pd black and Pd supported on alumina, graphite, or AlF₃. CH₂F₂ and CH₄ represented more than 95% of the products. The catalytic properties of Pd/AlF₃ samples are unchanged with time, but Pd/graphite, Pd/Al₂O₃, and Pd black suffered changes of activity and/or selectivity during the first few hours on stream. This was ascribed to the diffusion of halide species into the bulk of palladium, and transformation of Al₂O₃ to AlF₃. At the steady state, the kinetics of CF₂Cl₂ hydrogenation can be described either by a halogenation/dehalogenation of the Pd surface by CF₂Cl₂ and H₂, resp., or by a classical Langmuir-Hinshelwood mechanism. At 453 K the interaction between the Pd surface and CF₂Cl₂ or H₂ is of the same order of magnitude. The CH₂F₂/CH₄ selectivity ratio was the lowest on Pd/graphite and the highest on Pd/AlF₃. It is proposed that adsorbed, or absorbed, halide species are responsible for the loss of CH₂F₂ selectivity. The high selectivity ratio on Pd/AlF₃ is ascribed to a cooperative effect between Pd and AlF₃.
 IT 75-10-5P, Difluoromethane
 RL: FORM (Formation, nonpreparative); PREP (Preparation)

(formation of, in hydrogenation of dichlorodifluoromethane)
IT 75-71-8, Dichlorodifluoromethane
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrogenation of, over supported palladium catalysts)

L29 ANSWER 32 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1991:641017 HCAPLUS

DOCUMENT NUMBER: 115:241017

TITLE: Process for converting spent butane isomerization catalyst to pentane isomerization catalyst

INVENTOR(S): Khara, Gyanesh P.

PATENT ASSIGNEE(S): Phillips Petroleum Co., USA

SOURCE: U.S., 5 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5039639	A	19910813	US 1990-593457	19901005
PRIORITY APPLN. INFO.:			US 1990-593457	19901005
AB	A spent butane isomerization catalyst comprising Pt and Cl or Al ₂ O ₃ in an active pentane isomerization catalyst by a process comprising calcining and subsequent heating with a fluorocarbon and/or chlorofluorocarbon. The thus prepared catalyst can be used in the isomerization of pentane to isopentane.			
IT	75-10-5, Difluoromethane 75-71-8, Dichlorodifluoromethane RL: RCT (Reactant); RACT (Reactant or reagent) (in conversion of spent platinum-chlorine-alumina catalyst to butane isomerization catalyst)			

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